

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of)	
)	
Connect America Fund)	WC Docket No. 10-90
)	
A National Broadband Plan for Our Future)	GN Docket No. 09-51
)	
Establishing Just and Reasonable Rates for Local Exchange Carriers)	WC Docket No. 07-135
)	
High-Cost Universal Service Support)	WC Docket No. 05-337
)	
Developing a Unified Inter-carrier Compensation Regime)	CC Docket No. 01-92
)	
Federal-State Joint Board on Universal Service)	CC Docket No. 96-45
)	
Lifeline and Link-Up)	WC Docket No. 03-109
)	
Universal Service Reform — Mobility Fund)	WT Docket No. 10-208
)	

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INTRODUCTION AND SUMMARY

The Commission should follow one overriding objective in this proceeding: to confine the uncertainties and inefficiencies of intercarrier compensation regulation to the PSTN and keep them from infecting the Internet. As the PSTN sunsets, so should this singularly dysfunctional field of regulatory controversy. In the long run, there will be little or no “interconnection for the exchange of voice traffic,”¹ the traditional preoccupation of intercarrier compensation rules. Instead, in this era of convergence, there will be interconnection for the exchange of Internet Protocol (“IP”) packets, of which voice-bearing packets will be but a small subset. Market forces will ensure the efficiency of those data interconnection arrangements, just as they have since the federal government privatized the Internet backbone in the early 1990s.

Interconnection Between IP Networks. Portions of the *FNPRM* seem to overlook how this single greatest communications trend of the modern era, the convergence of all electronic communications over the IP platform, revolutionizes the answers to interconnection questions. For example, the *FNPRM* can be read to suggest that IP-to-IP interconnection—defined here as the exchange of traffic between unaffiliated networks independently operating in IP format—is a new development that network operators “should begin planning for” and that the Commission must develop a “policy framework” to superintend.² But such interconnection is as old as the commercial Internet. For the past two decades, the interconnection agreements that enable information-bearing IP packets to travel between two different IP networks have taken the form of bilateral peering and transit contracts. Those private agreements have always been unregulated, and they are responsible for the phenomenal success of the modern Internet, where

¹ E.g., Report and Order and Further Notice of Proposed Rulemaking, *Connect America Fund et al.*, FCC 11-161, WC Docket Nos. 10-90 *et al.*, ¶¶ 42, 652-53, 1011, 1341, 1344 (rel. Nov. 18, 2011) (“*Order*” or “*FNPRM*”).

² *Id.* ¶ 1010.

millions of Internet users exchange calls by means of mass market, over-the-top VoIP services every day.

Similarly efficient private agreements will continue to govern the exchange of IP packets in the years to come, even as all “carriers” complete their transition to IP networks. There is no plausible basis for concern that traffic exchanges between IP networks will be any less efficient in the future than they have been for the past two decades or any more in need of prescriptive regulation. In part because IP technology is distributed and packet-switched, indirect interconnection (via transit links) has always been the predominant form of interconnection on the Internet. And the multiplicity of alternative transit routes into a given ISP’s network, combined with the interdependence of every IP network on every other, deprives any ISP of the ability to coerce inefficiently high payments from any other IP network.

In addition, regulation of IP-to-IP interconnection arrangements would be not only needless, but affirmatively harmful. First, it would subject IP traffic exchanges, for the first time, to the hornet’s nest of regulatory controversies that have long beset the PSTN. For example, such regulation would mire the industry in intractable disputes about whether ever-evolving forms of IP-to-IP interconnection should be characterized as (regulated) “managed packet” exchanges “outside” the Internet or instead as part of the (long-unregulated) system of Internet peering and transit agreements. Such regulation would also distort the natural development of the Internet. The strong trend in the IP ecosystem is toward convergence, and differential regulatory treatment for IP packets carrying “voice” content would artificially impede prospects for integrating such packets with Internet traffic more generally, which already carries countless over-the-top VoIP calls without any regulatory oversight. Determining whether a particular packet, or stream of packets, contains the specific type of “voice” content to be

regulated—and not other categories of unregulated voice, video, or data content—would generate endless technical and regulatory disputes and mire the industry in years of litigation.

Just as troubling, any *U.S.* regulation of IP-to-IP interconnection would encourage *foreign* authorities, acting through the International Telecommunication Union (“ITU”), to begin regulating Internet peering and transit in opposition to U.S. interests. As NTIA Administrator Lawrence Strickling recently explained:

Many governments have called for the ITU to play a greater role in regulating peering and termination charges in order to compensate for lost telecommunication fees These governments fail to acknowledge how fundamentally different the Internet is to the forms of communication which preceded it. The Internet is a diverse, multi-layered system that thrives only through the cooperation of many different parties. All of these parties together form the ‘network of networks’ that we call the Internet, and to disrupt even one would jeopardize the entire system.³

Similarly, Commissioner McDowell rightly characterizes as “chilling” the various ITU proposals to “[i]mpose unprecedented economic regulations such as mandates for rates, terms, and conditions for currently unregulated traffic-swapping agreements known as ‘peering.’”⁴ These concerns are hardly new. A dozen years ago, the State Department emphasized to the ITU that “the United States firmly believes that establishing even high-level principles of price regulation for Internet charging arrangements based on the old telephony model would undermine the opportunities for broad and sustained development that are a fundamental characteristic of this

³ Remarks of Assistant Secretary Lawrence E. Strickling at the Brookings Inst., *Principles for Internet Governance: An Agenda for Economic Growth and Innovation* (Jan. 11, 2012), <http://www.ntia.doc.gov/speechtestimony/2012/remarks-assistant-secretary-strickling-brookings-institutions-center-technology> (“*Strickling Brookings Remarks*”).

⁴ Robert M. McDowell, *The U.N. Threat to Internet Freedom*, Wall St. J., Feb. 21, 2012, available at <http://online.wsj.com/article/SB10001424052970204792404577229074023195322.html> (“*McDowell, U.N. Threat to Internet Freedom*”).

technology[.]”⁵ Today, these threats of foreign regulation are resurgent and real, and the Commission would exacerbate them if it announced that the United States, too, is seriously considering the regulation of IP-to-IP interconnection, no matter what esoteric distinctions the Commission might invoke in an effort to cabin that initiative.

FCC regulation of IP-to-IP interconnection would be not only unwise as a policy matter, but also unlawful. The Commission has no authority, under Title II or otherwise, to regulate interconnection between two providers of Title I information services, as IP services should generally be classified. In addition, the section 251(c) requirements specific to “ILECs” do not apply to an information services provider, even if affiliated with a legacy telco, that provides IP-based services by means of new packet-switched, fiber-based networks. That result makes abundant sense. In 1996, ILECs occupied nearly 100 percent of the relevant market (“local exchange” telephone services). As the industry completes its shift to IP technology, consumers will buy communications services not from “CLECs” or “ILECs,” but from broadband ISPs. In that environment, wireline ISPs associated with legacy ILECs will hardly be “dominant” in any relevant market. Even today, and even if one excludes wireless providers from the market definition, non-cable wireline ISPs often lag behind their cable competitors in market share. It would be perverse to continue regulating those wireline ISPs as though they were monopolists in a product market where other providers are ascendant, particularly when some commentators have predicted that those other providers are likely to end up as broadband *monopolists* in their own right.⁶

⁵ Submission of the United States of America on ITU WTSA-2000, Document 49-E, at 7 (July 2000) (“*U.S. WTSA-2000 Submission*”).

⁶ See, e.g., Susan P. Crawford, *The Communications Crisis in America*, 5 Harvard L. & Pol’y Rev. 245, 248, 261 (2011) (“Given the tremendous economies of scale and cost advantages of the cable industry, being a wireline phone company is not a great business these days The

All this said, the Commission has important oversight roles to play in facilitating the transition to an all-IP world. First, the Commission should continue to monitor arrangements for IP-to-PSTN interconnection, including disputes over who should bear the costs of converting IP signals to circuit-switched TDM signals and vice versa. The Commission can resolve those disputes simply by setting a date for an official PSTN sunset, after which any TDM networks would have no regulatory entitlement to interconnection. As most providers and their customers move to IP platforms, the prospect of a PSTN sunset should encourage all remaining TDM networks to migrate promptly to IP technologies (or at least provide for IP-TDM gateways) to facilitate efficient interconnection with IP networks. But the Commission should hold open the possibility of further regulatory intervention if some TDM carriers appear to be reacting inadequately to those incentives as the sunset date approaches.

The Commission should also monitor the industry's progress towards an ENUM-type solution that will allow a VoIP caller's network to identify the called VoIP party's IP network on the basis of a ten-digit telephone number without making an inefficient detour into a PSTN tandem switching facility simply to obtain that information. This challenge is shared by all VoIP providers, including AT&T, and ILECs derive no special interim advantage from operating tandem switches that are used for these PSTN-in-the-middle number-lookup functions. Those workarounds are routinely provided by a number of competing providers, such as Level 3, Inteliquent (Neutral Tandem), and HyperCube, and they do not involve access to any last-mile "bottleneck" facilities. At the same time, however, the Commission should be careful not to take

emergence of a *de facto* cable monopoly in high-speed wired Internet access in most of the country cannot stay a secret."); Craig Moffett *et al.*, *U.S. Cable and U.S. Telecommunications: Broadband End Game?*, Bernstein Research, at 1, 7 (2010) ("[C]able's advantaged infrastructure will win the broadband wars. . . . Cable's share of 2Q 2010 net broadband additions rose steeply, to 91.4%, versus 67% in the prior quarter and a mere 41% in the year-ago quarter.").

any action that would lock service providers into reliance on telephone numbers in an all-IP environment, such as by adopting prescriptive regulations requiring establishment of an ENUM database.

Reform of PSTN Intercarrier Compensation. The Commission should also take a number of other PSTN-specific measures to ensure efficient use of the PSTN before its ultimate sunset. The *Order* makes great strides in this respect by replacing the existing patchwork of inefficient intercarrier compensation regimes with a uniform federal framework. But key implementation issues remain, and their resolution will determine whether the Commission's PSTN reforms promote or impede the transition to all-IP networks.

The *Order* adopts a bill-and-keep regime that requires terminating carriers to recover their network costs primarily from their own end-user customers. As the Commission explains, such a regime is far more efficient than the existing system, which permits terminating carriers to recover their costs from sending carriers and, ultimately, from those carriers' customers.⁷ But this obviously does not mean that sending carriers need never pay another carrier for handling their traffic. To the contrary, *every* coherent bill-and-keep proposal has made sending carriers responsible for covering the costs of an inter-network call up to some defined point between the calling and called parties. Known as the network "Edge," this is the point at which the sending carrier's responsibility for network costs ends and the terminating carrier's begins.

Significantly, this *financial* point of interconnection—the Edge—need not coincide with the *physical* point of interconnection between the sending and terminating carriers. The sending carrier may either build out its own facilities to the terminating carrier's Edge or instead hire another carrier as its subcontractor in transporting calls to that Edge. If it chooses the latter

⁷ *Order* ¶¶ 737-38, 742.

course, that subcontractor could be a third-party service provider, or it could be the terminating carrier itself. And the intermediate service that the sending carrier buys could take the form of either *switched transit* (with usage-sensitive charges paid by the minute) or *leased dedicated capacity* (with flat-rate charges paid, for example, by the month).

The key point is this: in *any* of these scenarios, the sending carrier is responsible for the costs of whatever intermediate service it buys from its designated subcontractor to reach the terminating carrier's Edge; indeed, that is simply what it means to define a network Edge. AT&T believes that the marketplace for such intermediate services is competitive and that regulation of those services is unnecessary. But if there is any disagreement on that point, it relates only to whether the rates that the sending carriers pay are *regulated*, not to whether those sending carriers may obtain those intermediate services from the terminating carrier (or a third-party provider) *for free*. Indeed, exempting the sending carrier from financial responsibility whenever its own facilities happen to stop short of the Edge, and imposing the costs of intermediate services on the terminating carrier (or a third party) instead, would obliterate the very concept of the Edge. That approach would destroy every carrier's incentives to build out its facilities and would devastate the existing marketplace for intermediate services (because no third-party provider like Inteliquent could possibly compete with free services compelled by regulation). And that approach would also be profoundly inadministrable because it would mire the industry in intractable disputes about exactly where the sending carrier's facilities should be deemed to "end" when interconnecting with a terminating carrier.

Reform of alternative cost-recovery mechanisms. Finally, the Commission should give carriers an adequate opportunity to recover their network costs as it reduces their intercarrier compensation revenues. Specifically, the Commission should permit carriers to recover those

costs from their end-user customers and, where appropriate, from universal service support. Thus, the Commission should reject calls by some parties to reduce or eliminate subscriber line charges or to accelerate the phase-down established in the *Order* for ARC charges and CAF ICC support. Although some parties suggest that end-user charges are presumptively too high because the Commission has not aggressively reduced them in recent years to reflect supposed “productivity” gains, the reality is the opposite. Over the past dozen years, ILEC economies of scale and density have plummeted as tens of millions of consumers have canceled service in favor of cable or wireless alternatives, and the per-unit costs of serving any given consumer have risen commensurately. Of course, once providers have moved to all-IP networks and are no longer rate-regulated, “SLC” and “ARC” rules will become irrelevant anyway. As in the wireless marketplace today, providers will simply charge whatever combination of flat-rated and usage-sensitive rates the market will support.

* * *

The remainder of these comments is divided into four major sections. Section I addresses why as a policy matter the Commission should not, and why as a legal matter it generally may not, regulate interconnection *between IP networks*. Section II addresses two issues specific to VoIP-PSTN interconnection; it explains why VoIP providers (as opposed to their CLEC partners) may not invoke section 251 interconnection rights in negotiations with ILECs, and why no rules are needed to govern cost-sharing for IP-TDM media gateways. Section III fleshes out specific proposals for implementing the Commission’s bill-and-keep framework for PSTN networks. Finally, Section IV addresses the proper transitional treatment of alternative cost-recovery mechanisms such as the SLC and the ARC.

DISCUSSION

I. THE COMMISSION SHOULD NOT REGULATE INTERCONNECTION AMONG IP NETWORKS

The term “IP-to-IP interconnection” means different things in different contexts. As used in these comments, that term denotes interconnection between two networks that provide service in IP format. In the long run, after the PSTN sunsets, most electronic communications will ride as higher-layer applications over IP, and almost all inter-network traffic exchanges will therefore take the form of “IP-to-IP interconnection” in this sense. The long-term policy issues surrounding such interconnection are distinct from shorter-term issues concerning the provision of the IP-TDM media gateways needed to enable *PSTN* customers to place calls to, or receive calls from, VoIP users (“IP-to-PSTN” interconnection). Those latter issues are important and are discussed in Section II below, but they fall outside of “IP-to-IP interconnection” as we use that term here.

The Commission should keep these two sets of issues completely distinct. Interconnection issues relating to the *transition* to an all-IP world likely will require the Commission’s active involvement on a range of issues involving the PSTN. But as discussed in Section I.A below, interconnection issues in the all-IP world *itself* will not require regulatory intervention any more than Internet peering and transit does today. In fact, such regulation would be affirmatively harmful because it would threaten the continued growth of IP networks and services. And as discussed in Section I.B, the Commission would lack authority to address most or all forms of IP-to-IP interconnection in any event.

A. Regulation of Interconnection Arrangements Between IP Networks Would Be Needless and Harmful

The *FNPRM* seeks broad comment on the regulatory dimensions of IP-to-IP interconnection, but mentions only in passing the most common and phenomenally successful

form of such interconnection: Internet peering and transit. The *FNPRM* appears to assume that “IP-to-IP interconnection for the exchange of voice traffic”⁸ (1) is and will remain categorically distinct from Internet peering and transit for the exchange of all other IP traffic and (2) might present special concerns that could theoretically warrant regulatory intervention—which, notably, the *FNPRM* does not propose for peering and transit itself. Both assumptions are mistaken. First, as the success of over-the-top VoIP providers like Vonage and Skype has shown, peering and transit arrangements have succeeded for nearly a decade in efficiently routing billions of voice calls over the Internet. *See* Section I.A.1, *infra*. Second, a growing number of IP networks have likewise negotiated interconnection arrangements for the efficient exchange of “managed” real-time services that include a voice component, such as Telepresence videoconferencing sessions. There is no reason to believe that such private arrangements will be any less efficient or dynamic than the marketplace for Internet peering and transit. *See* Sections I.A.2 and I.A.3, *infra*.

1. Market Dynamics Have Long Ensured Efficient IP-to-IP Interconnection on the Internet Among ISPs, Backbones, and Other IP Networks

“The Internet” is a loose confederation of thousands upon thousands of IP networks, most of them privately owned and operated. Each of these constituent networks has voluntarily adopted a common protocol and addressing scheme—the Internet Protocol—that enables its customers to communicate with customers connected to other networks for purposes of exchanging higher-layer applications and content.⁹ “The Internet,” as that term is commonly

⁸ *FNPRM* ¶¶ 42, 652-53, 1011, 1341, 1344.

⁹ *See* Resolution of the Federal Networking Council, Oct. 24, 1995 (quoted in Barry M. Leiner *et al.*, *A Brief History of the Internet*, ISOC, <http://www.isoc.org/internet/history/brief.shtml>) (“‘Internet’ refers to the global information system that—(i) is logically linked together by a globally unique address space based on the Internet Protocol (IP) or its subsequent extensions/follow-ons; (ii) is able to support communications using the Transmission Control

used, is a conceptual aggregation of these mostly private IP-based networks spread across the world.

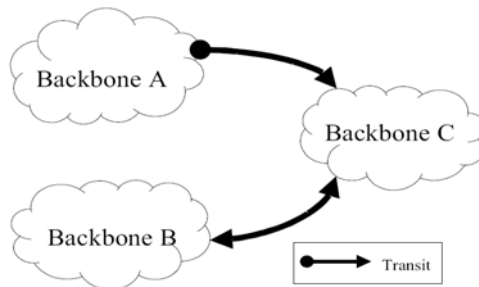
Two different IP networks exchange IP packets on the basis of unregulated private agreements that traditionally follow one of two business models: peering and transit. Under a transit agreement, Network X becomes a customer of Network Y and pays it to arrange delivery of Network X's packets *to any destination on the Internet* and to accept delivery of packets destined for Network X's customers *from any location on the Internet*.¹⁰ In contrast, under a peering agreement, two networks interconnect for the purpose of exchanging packets sent from customers served by one peer to customers served by the other peer.¹¹ An FCC white paper from 2000 summarizes the defining difference between these two models:

Protocol/Internet Protocol (TCP/IP) suite or its subsequent extensions/follow-ons, and/or other IP-compatible protocols; and (iii) provides, uses or makes accessible, either publicly or privately, high level services layered on the communications and related infrastructure described herein.”).

¹⁰ Michael Kende, *The Digital Handshake: Connecting Internet Backbones*, FCC Office of Plans and Policy, OPP Working Paper No. 32, at 7 (Sept. 2000), http://www.fcc.gov/Bureaus/OPP/working_papers/oppwp32.pdf (“*Kende Paper*”) (“[U]nlike in a peering relationship, with transit, the backbone selling the transit services will route traffic from the transit customer to its peering partners”).

¹¹ In this context, “customer served by a peer” means that the ultimate end user recipient of given IP packets subscribes either to the peer’s network itself or to another network that buys transit services from the peer’s network.

In [the figure below], backbone A is a transit customer of backbone C; thus, the customers of backbone A have access both to the customers of backbone C as well as to the customers of all peering partners of backbone C, such as backbone B. If backbone A and backbone C were peering partners, ... backbone C would not accept traffic from backbone A that was destined for backbone B.¹²



This peering and transit regime encompasses interconnection agreements among *all* of the Internet’s constituent IP networks, not just those between “backbone” networks (which provide long-haul transmission services over high-capacity facilities). In the 1990s, most Internet service providers (“ISPs”) exchanged traffic indirectly by purchasing transit services from backbone networks; the backbone networks interconnected directly with one another and thereby connected their respective ISP customers indirectly. Today, the Internet is less hierarchical in the sense that, while most ISPs still purchase transit services from backbones, many ISPs enter into a range of peering arrangements in their own right—with one another, with backbones, and with so-called “content-delivery networks,” which store content in cache servers close to interconnection points with individual ISPs.¹³ In short, peering and transit are not concepts confined to traditional “backbone” networks; instead, those concepts encompass a

¹² *Kende Paper*, *supra* note 10, at 7.

¹³ See generally Peyman Faratin, David Clark *et al.*, *The Growing Complexity of Internet Interconnection*, 72 Communications & Strategies 51, at 55 (4Q 2008) (“Faratin & Clark”); Christopher S. Yoo, *Innovations in the Internet’s Architecture that Challenge the Status Quo*, 8 J. Telecomm. & High Tech. Law 79 (2010); Stanley M. Besen, *et al.*, *Evaluating the Competitive Effects of Mergers of Internet Backbone Providers*, 2 ACM Transactions on Internet Technology 187, at 189-90 (2002).

broad range of bilateral interconnection relationships between diverse IP networks performing various roles throughout the Internet ecosystem.

Peering arrangements between similar IP networks often anticipate, among other things, that the traffic exchanged between the two networks will be roughly in balance, such that each network will incur roughly the same costs in handling the traffic originated by the other network. To avoid administrative overhead, parties to these bilateral peering agreements typically forgo the mutual exchange of compensation and peer on a *settlement-free* basis. But in some cases, where the traffic volumes exchanged have become unequal, or where one network no longer meets each element of the other's relevant peering criteria, the parties may enter into a *paid peering* arrangement. Under paid peering, the networks still exchange traffic through high-capacity peering links, but one network makes payments to the other. As discussed below, the paying party has abundant alternatives to paid peering if it does not wish to pay the price charged by the other network. For example, in the diagram above, if network A does not wish to pay network B's price for direct interconnection, it can buy transit services from network C (among many other transit alternatives), and C will then deliver A's traffic to B as part of C's own peering arrangement with B.

From their inception, these peering and transit relationships have been unregulated, and the Commission does not set or even monitor transit rates. This reflects a longstanding policy choice by the federal government. In the 1996 Act, Congress affirmed that “the policy of the United States” is “to preserve the vibrant and competitive free market that presently exists for the Internet and other interactive computer services, *unfettered by Federal or State regulation.*”¹⁴ Three years later, FCC Chairman William Kennard emphasized that “the best decision

¹⁴ 47 U.S.C. § 230(b)(2) (emphasis added).

government ever made with respect to the Internet was the decision that the FCC made . . . NOT to impose regulation on it. . . . It was intentional restraint born of humility. Humility that we can't predict where this market is going.”¹⁵ And the Kennard FCC simultaneously urged the governments of all nations to follow the FCC's example in “adopt[ing] a ‘hands-off’ Internet policy,” stressing once more that “[t]he Internet has evolved at an unprecedented pace, in large part due to the absence of government regulation.”¹⁶

Since then, the Internet has abundantly rewarded this longstanding policy of “unregulation,”¹⁷ and the marketplace for peering and transit services in particular has functioned with extraordinary efficiency. Because larger IP networks compete vigorously for the transit business of smaller ones, transit prices have plummeted dramatically over the past dozen years, falling from approximately \$1200/Mbps in 1998 to approximately \$5/Mbps in 2010¹⁸ and further still in 2011:¹⁹

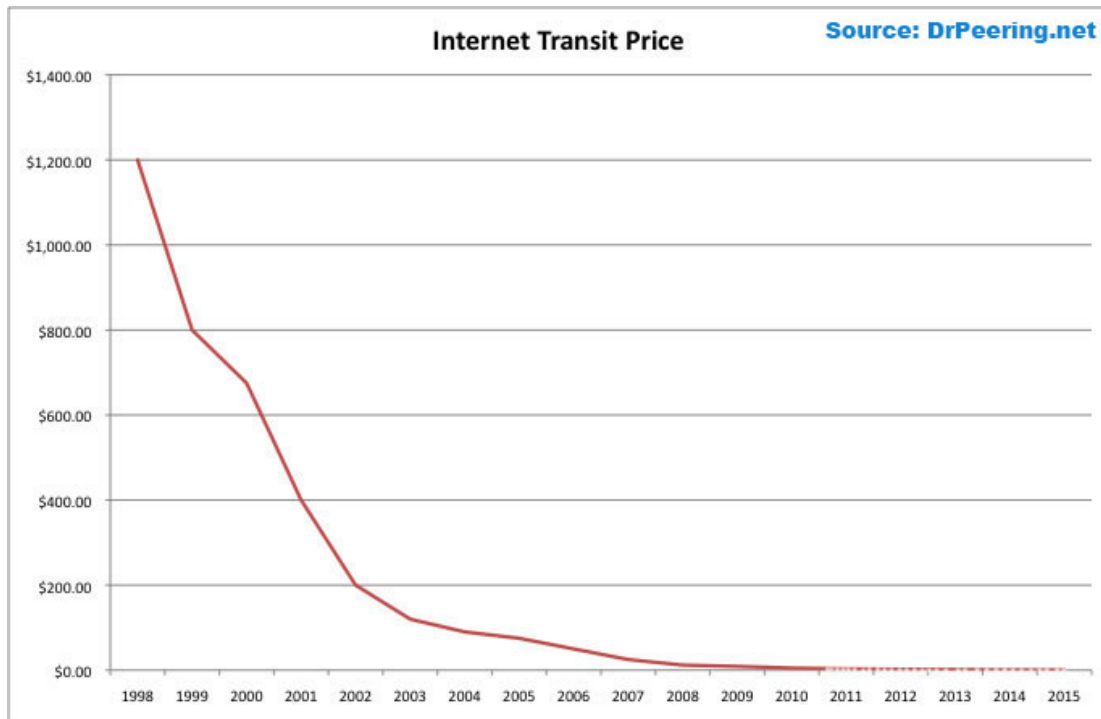
¹⁵ William Kennard, *The Road Not Taken: Building a Broadband Future for America*, FCC (June 15, 1999), <http://www.fcc.gov/Speeches/Kennard/spwek921.html>.

¹⁶ FCC, *Connecting the Globe: A Regulator's Guide to Building a Global Information Community*, at Section IX (1999), <http://www.fcc.gov/connectglobe/sec9.html>.

¹⁷ See Jason Oxman, *The FCC and the Unregulation of the Internet*, FCC Office of Plans and Policy, OPP Working Paper No. 31, at 24-25 (July 1999), http://www.fcc.gov/Bureaus/OPP/working_papers/oppwp31.pdf

¹⁸ DrPeering International, *Internet Transit Prices - Historical and Projected* (Aug. 2010), <http://drpeering.net/white-papers/Internet-Transit-Pricing-Historical-And-Projected.php>.

¹⁹ See, e.g., Telegeography, *Global Internet Geography* (Executive Summary), at 3 (2011), http://www.telegeography.com/page_attachments/products/website/research-services/global-internet-geography/0002/4221/telegeography-global-internet.pdf (“Between Q2 2005 and Q2 2011, median GigE port prices in New York and London declined at a compounded rate of approximately 20 percent, while prices in Hong Kong declined 16 percent. For the highest capacities in the most competitive markets, the lowest prices fell to \$1 per Mbps per month.”). The chart reproduced here is from DrPeering, *supra* note 18.



The Commission, too, has repeatedly found that the Internet transit and peering marketplace is competitive and efficient, and that any given IP network has little incentive or ability to engage in anticompetitive conduct.²⁰

Although the *FNPRM* focuses on IP-based voice communications, some passages (*e.g.*, ¶ 1347) suggest that the Commission might be open to broader regulation of Internet peering and transit relationships. Such regulation would in fact constitute an even greater departure from the unregulated status quo than the now-abandoned “third way” proposal in 2010, which advocated common carrier regulation for broadband Internet access services under select provisions of Title II. In that context, the Commission sought to reassure the public that, despite the broad

²⁰ See Memorandum Opinion and Order and Declaratory Ruling, *Applications filed by Global Crossing Ltd and Level 3 Communications, Inc. for Consent to Transfer Control*, 26 FCC Rcd 14056, 14067-69 ¶¶ 25-29 (WCB & IB 2011); Memorandum Opinion and Order, *AT&T Inc. and BellSouth Corp. Application for Transfer of Control*, 22 FCC Rcd 5662, 5736-38 ¶¶ 144-49 (2007); Memorandum Opinion and Order, *SBC Communications Inc. and AT&T Corp. Applications for Approval of Transfer of Control*, 20 FCC Rcd 18290, 18354-66 ¶¶ 116-39 (2005).

consensus that “the government must not regulate the Internet,” the proposed Title II regulation “would apply only to the *on-ramps used to access* the Internet.”²¹ Although AT&T disagrees that broadband Internet access is a mere “on-ramp” (it is instead a core part of the Internet itself), the Commission would be unable to invoke even that characterization to explain away any initiative to regulate “IP-to-IP interconnection.” Such an initiative would indisputably regulate the very guts of the Internet—the diverse and dynamic peering and transit relationships that have long determined the evolution of the modern Internet.

2. Any Regulation of IP-to-IP Interconnection On the Basis of Retail Service Classifications (e.g., “Voice”) Would Create Massive Regulatory Uncertainty, Turn Back the Clock on Technological Convergence, and Increase the Risk of Foreign Regulation of Internet Peering and Transit

The *FNPRM* focuses overwhelmingly on what it calls “the voice communications marketplace,”²² presumably because voice is the main service supported by the PSTN, and the Commission wonders what should happen to its 80-year-old scheme of Title II regulation once the subject of that regulation—the PSTN—fades away. As the *FNPRM* notes, various parties have suggested that, even in an all-IP environment, “voice” is different from other IP-enabled services exchanged via Internet peering and transit, and more in need of interconnection regulation, because it is a real time application with quality-of-service (“QoS”) needs.²³

That suggestion is incorrect for several reasons. First, many plain-vanilla, Internet-based voice services are in fact less QoS-sensitive than many other IP applications and, for most mass market purposes, can function well when exchanged over the best-effort Internet, as illustrated

²¹ FCC, *Legal Framework: Online FAQ on the Third Way*, Broadband.gov, <http://www.broadband.gov/legal-framework-faq-on-the-third-way.html> (last visited Feb. 21, 2012) (emphasis added).

²² *FNPRM* ¶ 1339.

²³ *Id.* ¶¶ 1344-46.

by the success of Vonage and Skype. The services that categorically *will* require special end-to-end handling to function properly, at least for the foreseeable future, are higher-bandwidth, QoS-sensitive IP applications such as Telepresence and similar high-definition videoconferencing services.²⁴ These services of course include voice as a common element, but voice is far from the only element that defines them. As shown by the success of private “Teleconference exchange” agreements (see below), the same marketplace dynamics that have produced efficient Internet peering and transit arrangements for two decades will also produce efficient exchanges of QoS-enhanced IP applications. In short, nothing is inherently special about consumer voice services in a converged IP environment, Title II has no rightful place in that environment, and the Commission should allow Title II common carrier obligations to sunset as the PSTN sunsets.

The relationship between “managed” IP services and the Internet. To place these observations in their proper context, we first address what it means to say that an IP service is “managed.”

IP networks have long been used not only for traffic exchanges with other IP networks, but also for purely on-net applications.²⁵ For example, the owner of a global IP-based network might manage its network capacity to assure the operation of real-time videoconferencing among the dispersed offices of multinational firms at the same time it provides those firms with best-effort Internet access services using the same IP-based network infrastructure. Or a local broadband provider might use its IP-based network to transmit multichannel video programming

²⁴ Of course, many consumers today utilize over-the-top videochat services such as Skype, which are routed over the best-effort Internet with no special handling, to communicate with friends and family. And it is uncertain which videoconferencing applications necessarily will require QoS enhancements to meet consumer expectations.

²⁵ See, e.g., Report to Congress, *Federal-State Joint Board on Universal Service*, 13 FCC Rcd 11501, 11531-32 ¶ 63 (1998) (“Report to Congress”) (“[M]any of the networks connected to the Internet are ‘intranets,’ or private data networks, that offer better performance or security to a limited set of users, but can still communicate with the Internet using IP.”).

services, including video on demand, to subscribers over routes designed specifically to handle those bandwidth-intensive and performance-sensitive IP applications, while also using the same network infrastructure to provide best-effort Internet access to those same subscribers.

On each of these IP networks, the network provider will typically assign customer traffic to different *logical* classes as they cross the same *physical* infrastructure in order to ensure that each higher-layer application receives the level of security and performance it needs to function properly. Different networks use different mechanisms to achieve this logical separation. For example, a network might mark the designated field in IP packet headers for special handling if the packets are associated with performance-sensitive applications such as real-time video.²⁶ In addition, the network might use MPLS (“multiprotocol label switching”) to allow fast processing and efficient routing of designated IP packets among MPLS-enabled routers.²⁷

The rise of QoS-aware inter-network traffic exchanges. Traditionally, arrangements for differential IP packet handling have been mostly—though not exclusively—confined to communications that begin and end on a single IP network, such as corporate LANs or residential IP access networks like AT&T’s U-verse. Differential packet handling is still uncommon for traffic exchanged between unaffiliated IP networks through ordinary peering and transit arrangements. If IP Network X marks packets for priority and hands them off to Network Y, Y would likely disregard X’s prioritization markings and treat the packets like all other best-

²⁶ James F. Kurose & Keith W. Ross, *Computer Networking: A Top-Down Approach* 367 (5th ed. 2010) (explaining that the DSCP field in IP packet headers “can be used to give priority to certain datagrams within a flow, or it can be used to give priority to datagrams from certain applications . . . over datagrams from other applications”).

²⁷ See *id.* at 502-04. Internet technology is modular and “layered,” in that the Internet Protocol itself (a Layer 3 protocol) can ride on top of many disparate transmission technologies (at Layers 1 and 2) and can support innumerable higher-layer applications (such as webpages and email). See generally *id.* at 50-54. MPLS is often described as a “Layer 2.5” protocol because it can ride on top of a variety of Layer 2 protocols (such as Ethernet or ATM), support communications in IP format, and enable differential QoS levels.

effort Internet traffic from that point forward (unless the networks have a special QoS peering arrangement). That phenomenon reflects a basic collective action problem. In the absence of “QoS-aware” compensation mechanisms, each network has an incentive to present *all* of its packets as “high priority” when handing off its traffic to another network, because any ensuing costs would be incurred only by the other network. Various standards-setting bodies are actively seeking a solution to this challenge by developing universally recognized, economically sustainable mechanisms for “QoS-aware” exchanges of traffic across multiple networks.²⁸ Those efforts remain a work in progress.

In the meantime, QoS-aware traffic exchanges have begun appearing as terms in *bilateral* arrangements between IP networks, similar to (but often still distinct from) the Internet peering and transit arrangements that govern best-effort Internet interconnection today. For example, AT&T has reached separate bilateral “Telepresence exchange” agreements with London-based BT and Paris-based Orange.²⁹ Under each agreement, AT&T’s business customers can join BT’s or Orange’s business customers in Telepresence videoconferencing sessions, even though these various participants are reaching the sessions via unaffiliated IP networks, and even though these sessions require special end-to-end packet handling across multiple continents to ensure service quality. Similarly, a number of other major IP networks—including Tata, Sprint, Telstra, and Telus—very recently announced a multilateral Telepresence exchange agreement of their

²⁸ These include, among others, the American Alliance for Telecommunication Industry Solutions’ Ordering and Billing Forum, GSMA, and i3 Forum. *See also* Quality of Service Working Group, *Inter-provider Quality of Service, White paper draft 1.1*, MIT Communications Futures Program (Nov. 17, 2006), http://cfp.mit.edu/publications/CFP_Papers/Interprovider%20QoS%20MIT_CFP_WP_9_14_06.pdf; InterStream, About, <http://interstream.com/about>.

²⁹ Press Release, *AT&T and Orange Business Services Expand Telepresence Community*, (Feb. 2, 2012), <http://www.att.com/gen/press-room?pid=22346&cdvn=news&newsarticleid=33819&mapcode=mk-mobility-solutions>; Paul Taylor, *AT&T and BT in telepresence exchange*, FT.com (Dec. 1, 2010), <http://www.ft.com/intl/cms/s/0/6adeaf40-fcb1-11df-bfdd-00144feab49a.html#axzz1n2agrC4q>.

own.³⁰ As with regular peering and transit, mutual self-interest has driven all of these networks to reach these QoS-aware interconnection agreements, all without any governmental compulsion.

Analogous private arrangements likewise enable mobile providers to exchange MMS (“Multimedia Messaging Service”) messages efficiently across different mobile networks. When a calling party on one network sends an MMS message (such as a photo or video clip) to a called party on another network, the sending network may not know what multimedia formats the called party’s handset can accept, what reformatting might be needed, or even what mobile network the called party is on. Many of the nation’s major mobile providers have solved these problems by agreeing to use central clearinghouses that keep track of which mobile customers have which handsets (and on which networks) and manage the reformatting necessary for fast and efficient delivery of technologically suitable MMS content to those handsets.³¹ Here, too, the industry has met these challenges without any regulatory oversight.

Policy implications. The examples discussed above illustrate several points. First, market forces are driving IP networks to negotiate efficient exchanges of “managed” traffic when necessary no less than those same market forces have driven them for decades to negotiate efficient exchanges of “best effort” traffic through Internet peering and transit agreements. No market failure has arisen to suggest that regulation will be necessary to ensure efficient outcomes for any type of IP traffic exchange. And as discussed below, the so-called “terminating access

³⁰ Tejas Patel, *Telcos team up to interconnect their business video communities*, RCR Wireless News (Feb. 1, 2012), <http://www.rcrwireless.com/india/20120201/carriers/telcos-team-up-to-interconnect-their-business-video-communities/>.

³¹ See Syniverse, *MMS Interoperability Solution* (last visited Feb. 21, 2012), http://www.syniverse.com/files/service_solutions/pdf/mms_interop_solution_0611.pdf; Sybase, *Sybase MMX 365* (last visited Feb. 23, 2012), <http://www.sybase.com/mobileservices/operator-services/mmx365>.

monopoly”—a creature of the PSTN and its regulatory peculiarities—has never applied to, much less threatened the efficiency of, interconnection arrangements among IP networks.

Second, these real-world examples also show that the “managed” traffic that IP networks exchange separately today from best-effort Internet traffic do not include only, or even primarily, the ordinary “voice” services that are the regulatory preoccupation of this proceeding. Indeed, plain-vanilla voice services have far less need for special-handling arrangements than do a variety of more bandwidth-intensive and performance-sensitive services such as real-time video.³² Over-the-top interconnected VoIP providers like Vonage and Skype have gained tens of millions of satisfied and passionately loyal customers. Each day, these customers use the best-effort Internet to place and receive millions of calls connecting them with one another.³³ Significantly, the (usually distinct) broadband ISPs serving the calling and called parties treat the voice-bearing packets of those parties no differently from all other Internet packets traversing their networks, and the packets cross Internet peering points to move from one IP network to the next. Even so, and precisely because Internet peering and transit arrangements are so efficient, the call quality of these over-the-top VoIP services is good. These services are likely to continue

³² In addition, within the stream of IP packets crossing the Internet today, VoIP-related packets constitute a tiny and diminishing percentage of traffic. *See* Attachment C to these comments (illustrating this phenomenon). *See also* Cisco, *Cisco Visual Networking Index: Forecast and Methodology, 2010-2015*, at 9 Table 9 (June 1, 2011), http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-481360.pdf; Google, *The Tail Wagging the Dog: A Comparison of PSTN and IP Traffic From 1997 to 2015* (June 14, 2011), attached to Letter from Donna M. Lampert, Counsel to Google, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 10-90 *et al.* (filed June 16, 2011). Voice signals are not bandwidth-intensive, particularly as compared to increasingly popular IP video services.

³³ *See, e.g.,* TeleGeography, Press Release, *International Call Traffic Growth Slows as Skype’s Volumes Soar* (Jan. 9, 2012), <http://www.telegeography.com/press/press-releases/2012/01/09/international-call-traffic-growth-slows-as-skypes-volumes-soar/index.html> (international Skype-to-Skype traffic grew to 145 billion minutes in 2011, compared to 438 billion minutes for traditional telcos).

appealing to consumers who place as much of a premium on price and portability as on call quality.

Of course, enterprise business customers and some consumers likely will continue to value the greater security and reliability of managed VoIP services, and carriers will negotiate commercial arrangements for the exchange of managed VoIP traffic across their disparate networks much as they have negotiated the exchange of Telepresence traffic without the need for any regulatory intervention. Our point is that QoS-aware exchanges of managed IP traffic are no more likely to involve special handling for simple voice services than they are to involve special handling for a variety of other performance-sensitive applications, such as massive multiplayer gaming applications, real-time high-definition video, and videoconferencing. And in the long run, these commercial interconnection arrangements may well be indifferent to the *retail labels* (“voice,” “gaming,” “teleconferencing”) applied to particular higher-layer applications. What will matter instead is the degree of special handling that a retail application provider (such as a retail gaming or videoconferencing service provider) has asked its IP network provider to supply on its own network and obtain from other, interconnecting IP networks. Different retail VoIP providers may choose to enter into agreements for different end-to-end QoS enhancements (or, like Skype and Vonage, none at all), while a gaming or videoconferencing provider may obtain higher QoS assurances than most VoIP providers. In short, the Commission cannot sensibly target “the exchange of voice traffic” for special regulatory treatment as though “voice” were uniquely in need of special interconnection arrangements, because it is not.

Indeed, that voice-centric approach would ignore the phenomenon of convergence and plunge the industry back into the regulatory silos of the twentieth century, when policymakers assigned special rules to higher-layer *services* (such as “voice” or “video”) on the premise that

each such service would be forever associated with its own distinct set of physical-layer transmission arrangements. The modern IP ecosystem obliterates that premise; bits are bits and can ride on top of any broadband platform. Such convergence carries many advantages beyond the obvious economies of scale and scope derived from building one network rather than several; it also allows for the integration of voice, video, and text into feature-rich multimedia applications, and it facilitates greater competition among service providers. But if the Commission began designing special regulations “for the exchange of voice traffic,” many IP networks would likely try to cabin the scope of such regulations by artificially segregating the affected traffic from other IP traffic. That outcome would defeat one of the key aspirations of the Internet revolution: the convergence of all forms of electronic communication over a dynamic and unified IP platform. And it would therefore inflict wasteful costs on the Internet ecosystem in the form of diminished innovation, redundant infrastructure, and decreased economies of scale and scope.

For much the same reason, special regulation of IP-to-IP interconnection “for the exchange of voice traffic”—or for any other traffic class defined on the basis of its retail service label—would usher in a new generation of intractable regulatory controversies. No matter how the Commission defines the regulation-triggering service, it would cause regulatory uncertainty about the services and traffic exchanges that fall within or outside the scope of the new regulation. For example, if the relevant service category were “voice services,” would the ensuing regulatory regime address only “regular” voice “telephony” services, or would it extend to all services for which voice is a significant component, such as videoconferencing? If it does extend to such services, would it apply to consumer-grade videochat services such as those offered by Skype and Google? To high-end enterprise applications such as the Telepresence

service discussed above? To services falling somewhere in between those quality poles and, if so, on the basis of what criteria? Would the rule apply to multiplayer online video game services such as Xbox Live, in which participants converse in real time? There could be no straightforward answers to such questions precisely because they are *the wrong questions to ask* in a convergent marketplace marked by rapid and unpredictable evolution in retail services. Such questions would certainly keep the telecommunications bar busy for years, but what is good for the bar—controversy and uncertainty—is typically bad for investment and consumers.

Notably, all of these intractable questions about the scope of the relevant “voice” services would arise even if the Commission adopted suggestions to regulate only the exchange of “‘managed’ or ‘facilities-based’ VoIP, as distinct from ‘over the top’ VoIP.”³⁴ The Commission would still need to define “VoIP” services in a fast-evolving marketplace and answer questions about *how much* voice functionality converts an unregulated traffic exchange into a regulated one.³⁵ Beyond that, the distinction between “managed” and “over-the-top” is also unstable and could not serve as a coherent limiting principle for regulation. To say that an IP service is “managed” is simply to say that the IP networks handling the service’s packets have agreed to

³⁴ FNPRM ¶ 1346. As suggested above, it should be unthinkable to impose special interconnection obligations for *over-the-top* VoIP services, given that (1) general peering and transit arrangements have always been sufficient to support those services, and (2) the packets associated with those services have always been commingled indistinguishably with all other Internet traffic, and subjecting such packets to special regulation for the first time would severely disrupt the peering and transit marketplace.

³⁵ Indeed, it took the Commission three years and two separate orders to resolve the regulatory classification of prepaid calling-card services, a dispute that appears straightforward and mundane when compared to the next-generation classification disputes that would arise if the Commission tried to classify the various “voice” services crossing IP networks today. See Declaratory Ruling and Report and Order, *Regulation of Prepaid Calling Card Services*, 21 FCC Rcd 7290 (2006), *vacated in part*, *Qwest Servs. Corp. v. FCC*, 509 F.3d 531 (2007); Order and Notice of Proposed Rulemaking, *AT&T Corp. Petition for Declaratory Ruling Regarding Enhanced Prepaid Calling Card Services*, 20 FCC Rcd 4826 (2005), *aff’d*, *AT&T Co. v. FCC*, 454 F.3d 329 (D.C. Cir. 2006).

give those packets some form of special handling (such as ToS markings or MPLS routing) in order to ensure some specified degree of QoS. But there are many forms of special handling and many degrees of QoS, and both concepts denote sliding scales in performance rather than binary choices.³⁶

There are also many possible ways for networks to exchange “managed” services, and those exchanges might themselves become part of Internet peering and transit agreements. While some providers may agree to exchange certain categories of “managed” traffic over *physically* separate interconnection facilities, some might opt instead for a more convergent approach based on *logical* separation (much as individual IP networks, as discussed above, logically separate “managed” and “best effort” traffic within the same Internet backbone facilities). For example, two interconnecting networks might commingle both “managed” packets and best-effort Internet packets within their traffic exchanges as part of a single peering and transit arrangement, distinguishing the various packet categories only by mutually recognized ToS markings on packet headers. In that context, the Commission logically could not regulate such “managed packet” exchanges without, by definition, regulating Internet peering and transit arrangements for the first time. And under *any* model of “managed packet” exchanges, regulatory obligations would give IP networks throughout the Internet ecosystem arbitrary and economically inefficient incentives to choose one packet-exchange technology over another simply to avoid (or exploit) various regulatory consequences. The opportunities for arbitrage and gamesmanship would be immense.

³⁶ For example, the “Managed Internet Service” that AT&T provides to enterprise customers (including content and application providers) offers different QoS levels depending on each customer’s preferences, as expressed in “service level agreements” (“SLAs”).

More troubling still, any *U.S.* regulation of IP-to-IP interconnection would encourage *foreign* regulatory authorities to begin regulating peering and transit for all IP traffic originated in the United States and terminated abroad. This is no abstract concern. The International Telecommunication Union (ITU) is now actively considering proposals—known by the generic name “ICAIS” (“International Charging Arrangements for Internet Services”)—to regulate international peering and transit arrangements in order to compensate foreign carriers for lost voice termination revenues as the Internet supplants the PSTN.³⁷ This Administration strongly opposes such initiatives. As NTIA Administrator and Assistant Secretary of Commerce Lawrence Strickling explained last month, these proposals “fail to acknowledge how fundamentally different the Internet is to the forms of communication that preceded it,” in that the Internet “does not operate under the anachronistic model of monopoly telephone providers” but is instead “a diverse, multi-layered system that thrives only through the cooperation of many different parties.”³⁸ As Assistant Secretary Strickling concluded, “to disrupt even one” of those parties through such regulation of Internet peering and transit “would jeopardize the entire system.”³⁹ The federal government has been voicing similar concerns for many years. Responding to similar ITU initiatives in 2000, for example, the United States announced that it “firmly believes that establishing even high-level principles of price regulation for Internet charging arrangements based on the old telephony model would undermine the opportunities for broad and sustained development that are a fundamental characteristic of this technology[.]”⁴⁰

³⁷ See Strickling Brookings Remarks, *supra* note 3.

³⁸ *Id.*; see also McDowell, *U.N. Threat to Internet Freedom*, *supra* note 4.

³⁹ *Id.*

⁴⁰ *U.S. WTSA-2000 Submission*, *supra* note 5.

The Commission could undermine this longstanding U.S. policy against foreign Internet regulation if, in a nod to “the old telephony model,” it reversed decades of deregulatory precedent and announced that it will now exercise regulatory authority over IP-to-IP interconnection. Even if the Commission purported to regulate only certain classes of IP-to-IP interconnection (such as “interconnection for the exchange of voice traffic” rather than “Internet peering and transit in general”), any purported limiting principles could well be lost on foreign authorities, who could seize the opportunity to regulate *all* classes of IP-to-IP interconnection, including Internet peering and transit.

To reiterate a critical point: all of these harmful consequences would be completely needless because market forces are perfectly capable of producing efficient traffic exchanges on their own, including for the exchange of “managed packet” services. The commercial arrangements discussed above confirm that conclusion as an empirical matter. And as we next discuss, even the principal *theoretical* basis for imposing interconnection rules on the PSTN is inapplicable to the IP ecosystem.

3. The Shift from TDM to IP Alters Economic and Regulatory Relationships, Not Simply Transmission Technologies, and Forecloses Any Concern About a “Terminating Access Monopoly”

Unlike the Internet’s constituent IP networks, circuit-switched local exchange networks have always been subject to interconnection obligations. The *FNPRM* asks why such obligations should depend on whether a local network is IP-based (*i.e.*, acts as a broadband ISP) or TDM-based (*i.e.*, acts as a circuit-switched telephone company). In essence, the *FNPRM* seeks comment on the following syllogism, advanced by pro-regulation advocates: (1) voice services are subject to interconnection obligations when offered by circuit-switched telcos; (2) the distinctions between TDM and Internet protocols are mere technological formalities and should be irrelevant for regulatory purposes; and (3) voice services should therefore still be subject to

interconnection obligations when offered by ISPs.⁴¹ That conclusion is wrong because the second premise is mistaken. The shift from TDM to IP enables the communications ecosystem to avoid both the technological features and—just as important—the regulatory baggage that have long made pervasive interconnection and intercarrier compensation obligations seem necessary for the circuit-switched PSTN.

First, as a technological matter, the distributed and packet-switched nature of the Internet, along with the lack of regulatory interconnection obligations, has made *indirect* interconnection (through intermediate transit links) far more prevalent in the IP context than it has historically been on the circuit-switched PSTN.⁴² Indirect interconnection opens up a multiplicity of routes into any broadband ISP's network, giving all IP networks (including ISPs) strong incentives to reach efficient interconnection arrangements.

Suppose, for example, that an IP network seeks a direct peering relationship with a broadband ISP in order to deliver its traffic to the ISP's customers. If the traffic between the two networks is grossly imbalanced, the ISP may try to condition any direct peering arrangement on the payment of compensation. But if it demands too high a price, the IP network can simply balk, because it has many alternatives for delivering its traffic to the ISP's customers. For example, it could do what IP networks have done for two decades: it could reach end users by purchasing intermediate transit services from one of many third-party IP networks.⁴³ And that

⁴¹ E.g., *FNPRM* ¶ 1389.

⁴² Direct PSTN interconnection includes not only two-carrier “local” calls but also three-carrier “long distance” calls for the diminishing class of customers that have different local and long-distance carriers. In the latter context, the “calling party's network” is the long-distance provider, with whom the calling party has a direct commercial relationship, and that network typically relies on direct interconnection with the called party's local network to terminate the call.

⁴³ See P. Faratin *et al.*, *Complexity of Internet Interconnections: Technology, Incentives and Implications for Policy*, at 8-11 (Sept. 2007), <http://people.csail.mit.edu/wlehr/> Lehr-

third-party IP network may in turn be either (1) a settlement-free peer of the ISP—in which case the ISP would receive no compensation for terminating the traffic—or (2) the ISP’s *own* transit provider as well, in which case the ISP may end up *paying* to terminate the traffic.⁴⁴ Either way, the ISP may be worse off than if it had agreed to reasonable terms for direct peering. The availability of transit (indirect interconnection) as an alternative to paid peering (direct interconnection) will thus generally keep the price of paid peering below the price of transit. And that is a powerful competitive check: as discussed, because the transit market is highly competitive, the price of transit has been plummeting for a dozen years straight.

These observations refute arguments by some parties that a supposed “terminating access monopoly”—said to arise from the control that even small carriers have over the lines leading to their subscribers—somehow justifies regulating Internet peering and transit or any other form of IP-to-IP interconnection.⁴⁵ Any reliance on that concept is misplaced here because the “terminating monopoly” concern originates from and is peculiar to the PSTN. As an initial matter, the hierarchical, circuit-switched nature of the PSTN often makes it less efficient than it

Papers_files/Clark%20Lehr%20Faratin%20Complexity%20Interconnection%20TPRC%202007.pdf.

⁴⁴ *Faratin & Clark, supra* note 13, at 63 (explaining that if one network denies settlement-free peering privileges to others, those other networks, “if they can control the routing of their traffic,” can “cause their traffic to/from the prospective peer to route over the peer’s transit connection to raise the peer’s transit costs in order to induce it to peer”); Rudolph van der Berg, *How the ‘Net works: an introduction to peering and transit*, Ars Technica (Sept. 2, 2008), <http://arstechnica.com/old/content/2008/09/peering-and-transit.ars> (“Allegedly, a big American software company was refused peering by one of the incumbent telco networks in the north of Europe. The American firm reacted by finding the most expensive transit route for that telco and then routing its own traffic to Europe over that link. Within a couple of months, the European CFO was asking why the company was paying out so much for transit. Soon afterward, there was a peering arrangement between the two networks.”).

⁴⁵ *See, e.g.*, Letter from Paul Kouroupas, Global Crossing, to Marlene Dortch, Secretary, FCC, GN Docket No. 09-191, at 2 (filed Feb. 4, 2011); Letter from John M. Ryan, Level 3, to Chairman Julius Genachowski, FCC, GN Docket No. 09-191, at 1-2 (filed Feb 16, 2011).

is in an IP environment to route a call through multiple intermediate links en route to the called party, given that fixed circuits must be reserved on each intermediate link for the duration of any call, thereby “wasting” capacity during every split-second gap in a conversation. No such inefficiency arises in IP-to-IP interconnection. In the distributed, packet-switched Internet, no circuits are held open at all; capacity on intermediate networks can thus be offered at far lower cost; and, as discussed, the abundance of indirect interconnection alternatives gives all IP networks strong incentives to reach efficient interconnection arrangements.

More important, the PSTN examples that the pro-regulation advocates cite as evidence of a “terminating access monopoly” involved failures not of the *market*, but of *regulation* itself, and they never would have arisen in the absence of government-mandated interconnection and intercarrier compensation obligations. Consider, for example, the so-called “CLEC access charge” controversy of a dozen years ago, the poster child of “terminating monopoly” abuses.⁴⁶ Before the Commission intervened in 2001, a CLEC could charge any long-distance carrier radically inflated rates for terminating access traffic. It had that power not because of any market failure, but because the Commission had enacted rules that (1) compelled interexchange carriers (“IXCs”) to interconnect with any CLEC and hand off all terminating traffic bound for that CLEC’s customers; (2) entitled the CLEC to tariff its termination rates unilaterally; and (3) required those IXCs to pay the tariffed termination rates in the process, no matter how objectionably high they might be.⁴⁷ In addition, section 254(g) of the Communications Act precluded these IXCs not only from sending the bill to the called parties (*i.e.*, to the CLEC’s end users), but also from passing the inflated termination charges through to the specific calling

⁴⁶ See Seventh Report and Order and Further Notice of Proposed Rulemaking, *Access Charge Reform; Reform of Access Charges Imposed by Competitive Local Exchange Carriers*, 16 FCC Rcd 9923 (2001) (“*CLEC Access Charge Order*”).

⁴⁷ See *id.* at 9924-25 ¶ 2.

parties who placed these particular calls.⁴⁸ The net result of these Title II regulations was to make the CLECs' subscribers completely indifferent to the level of these termination charges, and thus to preclude any market response to them.

The Commission corrected this problem—which it rightly traced to “use of the regulatory process”—by “mandatorily detariff[ing]” CLEC access rates above certain levels and forcing CLECs to “*negotiate* [any] higher rates with the IXC.”⁴⁹ And it thereby subjected those rates, for the first time, to the discipline of market forces. The Commission took similar steps to fix the flawed “ISP reciprocal compensation” regime, which allowed a CLEC serving dial-up ISPs to force ILECs (whose customers “called” those ISPs) to interconnect and pay inflated “reciprocal compensation” rates set by state commissions⁵⁰—but only because regulation compelled the ILECs to hand off the calls to the CLEC and pay those rates.

The Commission has *never* found any “terminating access monopoly” in the *absence* of Title II interconnection and compensation obligations. And no such “monopoly” can be found anywhere on the Internet today, which has prospered entirely without interconnection obligations. If broadband ISPs had a “terminating monopoly,” one would expect to see them

⁴⁸ See 47 U.S.C. § 254(g).

⁴⁹ *CLEC Access Charge Order*, 16 FCC Rcd at 9924-25 ¶¶ 2, 3 (emphasis added). The wireless industry provides an instructive contrast. Because wireless carriers have no right to tariff access charges, they have no means of forcing other carriers to pay terminating access fees, as the Commission’s *Sprint PCS Order* made clear ten years ago. See Declaratory Ruling, *Petitions of Sprint PCS and AT&T Corp. for Declaratory Ruling Regarding CMRS Access Charges*, 17 FCC Rcd 13192 (2002), *appeal dismissed sub nom. AT&T Corp. v. FCC*, 349 F.3d 692 (D.C. Cir. 2003). Since then, no wireless provider has seriously tried to unilaterally impose access charges on another carrier; instead, such providers almost always terminate traffic without charge.

⁵⁰ See Order on Remand and Report and Order, *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Intercarrier Compensation for ISP-Bound Traffic*, 16 FCC Rcd 9151 (2001), *remanded but not vacated by WorldCom, Inc. v. FCC*, 288 F.3d 429 (D.C. Cir. 2002); see also Order on Remand and Report and Order and Further Notice of Proposed Rulemaking, *High-Cost Universal Service Support et al.*, 24 FCC Rcd 6475 (2008).

charging Internet backbone providers inefficiently high rates for terminating traffic to their subscribers. In fact, however, most broadband ISPs have some combination of settlement-free peering arrangements and transit arrangements with backbone providers for connectivity to the broader Internet.⁵¹ This is no surprise because, again, broadband ISPs cannot force other IP networks to interconnect (in the way that LECs can force interexchange carriers to exchange traffic on the PSTN today), but rather must negotiate efficient arrangements to ensure that their customers can reach all points on the Internet. Thus, broadband ISPs typically have little bargaining leverage in negotiating the terms of interconnection with other IP networks.⁵²

Again, these theoretical considerations merely confirm what practical observation confirms: the IP-to-IP interconnection marketplace has functioned efficiently for many years in spite of—indeed, because of—a complete lack of regulatory interconnection obligations.

* * *

In the foreseeable future, most consumers, even if they subscribe to VoIP services, will probably wish to continue using their accustomed ten-digit telephone numbers as identifiers for themselves and their contacts. Although formal Commission involvement would be premature and may never be necessary, an expeditious transition to an all-IP calling environment may require the development of a universally accessible IP-based look-up mechanism, similar to (or as part of) the DNS system that currently governs other Internet traffic exchanges.

⁵¹ See P. Faratin, *Complexity of Internet Interconnections*, *supra* note 43, at 9-11.

⁵² In addition, there is also no counterpart to section 254(g) on the Internet. If, for example, a broadband ISP somehow succeeded in overcharging another IP network for paid peering, that IP network could pass through the charges to its content-provider customers—who in turn could pass them through to the *broadband ISP's own customers* as the price of receiving the content in question so long as they continue subscribing to that ISP. And the content provider would be free to publicize that fact and ask its customers to consider switching ISPs. That dynamic would discipline paid peering rates even if third-party transit were *not* a competitive alternative for the IP network.

Today there is no readily available database that a calling VoIP party's IP network can query in order to obtain the IP network address it needs to route traffic to a called VoIP party simply on the basis of a ten-digit telephone number assigned under the North American Numbering Plan ("NANP"). Without such information, a calling party's IP network will need to convert its signals into TDM format and route them through PSTN facilities—normally a tandem switch operated either by an ILEC or one of several competitive alternatives such as Level 3, Inteliquent (Neutral Tandem), or HyperCube—simply to find out which IP network is responsible for a VoIP-associated NANP number. Some IP-based networks (such as those operated by the major cable companies) have reportedly begun experimenting with partial fixes to this problem by exchanging subscriber information on a bilateral basis or through a private ENUM registry. Over the long term, such bilateral information exchanges, combined with cooperative solutions developed by the industry,⁵³ may be sufficient to enable VoIP providers to avoid wasteful detours into PSTN facilities simply to perform number look-up functions. But measures to address this challenge remain in a very early stage, and thus the Commission should continue to monitor the industry's progress in developing a viable solution.

Significantly, these number look-up policy challenges are faced equally by all ISPs and all other IP networks. No IP network is exempt from them simply because it also operates a legacy PSTN network, and all IP networks would prefer simply to convey any VoIP-to-VoIP call entirely in IP format. Second, during the transitional period before broadly accessible ENUM solutions become available, IP networks will make use of the PSTN in the ways described, but—

⁵³ S. Bradner *et al.*, *The E.164 to Uniform Resource Identifiers (URI) Dynamic Delegation Discovery System (DDDS) Application (ENUM)*, RFC 6116 (March 2011), <http://www.ietf.org/rfc/rfc6116.txt.pdf>; J. Livingood, *The E.164 to Uniform Resource Identifiers (URI) Dynamic Delegation Discovery System (DDDS) Application for Infrastructure ENUM*, RFC 5526 (Apr. 2009), <http://www.ietf.org/rfc/rfc5526.txt.pdf>.

critically—they will *not* need to use any last-mile “bottlenecks” in the PSTN. They will instead use tandem switching functionality for interconnection, and the market for such functionality is now competitive, featuring not only ILECs but competitors such as Level 3, Inteliquent, and HyperCube. Thus, even to the limited (and diminishing) extent to which the PSTN will remain involved in IP-to-IP interconnection between VoIP callers over the long term, that involvement will not somehow benefit ILECs in the contest for subscribers. More generally, as the PSTN sunsets, ILECs will lose any vestige of the historical monopoly status that justified their special regulatory status under the 1996 Act.

B. The Commission Lacks Legal Authority to Regulate Interconnection Arrangements Between IP Networks

The previous Section explains why, as a policy matter, any Commission action to regulate “IP-to-IP interconnection”—defined in these comments as interconnection between two networks providing service in IP format—would be both unnecessary and harmful. As discussed below, such regulation would also generally be *unlawful*. In particular, the Commission lacks authority to regulate interconnection between two providers of IP-based “information services,” as retail VoIP providers and Internet service providers (among others) are properly classified.⁵⁴ Again, these issues are related to but distinct from questions about the Commission’s legal authority to adopt rules relating to the exchange of traffic between circuit-switched ILECs, which have *not* yet made the transition to IP services, and retail VoIP providers. We address those latter questions in Section II.A below.

⁵⁴ See, e.g., note 57, *infra* (cross-referencing submissions concerning the legal classification of VoIP services); Comments of AT&T, *Framework for Broadband Internet Service*, GN Docket No. 10-127, at 67-90 (filed July 15, 2010) (addressing legal classification of Internet service providers).

1. Sections 251(a) and 251(c) Provide No Authority to Regulate IP-to-IP Interconnection

Congress added section 251 to Title II of the Communications Act in order to promote competition in various markets for Title II “telecommunications services.” To that end, section 251(a)-(c) gives “telecommunications carriers” various rights with respect to other “telecommunications carriers” in general and “local exchange carriers” and “incumbent local exchange carriers” in particular. By their terms, those provisions are inapplicable *either* when the party seeking to interconnect *or* when the party from whom interconnection is sought is not itself a “telecommunications carrier.”

For all relevant purposes, the term “telecommunications carrier” is synonymous with “common carrier”⁵⁵ and is defined as “any provider of telecommunications services.” 47 U.S.C. § 153(51). The Act further specifies that any “telecommunications carrier shall be treated as a common carrier under this [Act] *only to the extent that it is engaged in providing telecommunications services.*” *Id.* (emphasis added). As the Commission has long observed, moreover, the statutory categories “telecommunications service[s]” and “information service[s]” are mutually exclusive.⁵⁶ Thus, the Commission may not invoke any provision of section 251 to require X to interconnect with Y if Y is providing an information service, as VoIP providers are, let alone when *both X and Y* are offering such services, as in most or all cases of IP-to-IP interconnection.

⁵⁵ See, e.g., *Virgin Islands Tel. Corp. v. FCC*, 198 F.3d 921, 926-27 (D.C. Cir. 1999).

⁵⁶ 47 U.S.C. § 153(51); see Report to Congress, 13 FCC Rcd at 11522-23 ¶ 43; see also Declaratory Ruling and Notice of Proposed Rulemaking, *Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities*, 17 FCC Rcd 4798, 4823-24 ¶ 41 (2002), *aff’d*, *Nat’l Cable & Telecomms. Ass’n v. Brand X Internet Servs.*, 545 U.S. 967 (2005).

a. Section 251(a) is inapplicable because information service providers are not “telecommunications carriers”

Section 251(a) requires every “telecommunications carrier” to interconnect directly or indirectly with “other telecommunications carriers.” 47 U.S.C. § 251(a). As AT&T has explained in many prior filings, VoIP providers—like other providers of IP-based services—are not “telecommunications carriers” because they provide “information services” and not “telecommunications services.”⁵⁷ That is because, among other considerations, VoIP involves net protocol conversion and is tightly integrated with other functionalities that allow end users to “generat[e], acquir[e], stor[e], transform[], process[], receive[e], utilize[e], or mak[e] available information via telecommunications.” *See id.* § 153(24). And VoIP providers are therefore ineligible to invoke section 251(a) rights. *See id.* § 153(51). In addition, since section 251(a) also imposes *duties* only on “telecommunications carriers,” that provision is doubly inapplicable where *both* the calling *and* the called parties are communicating via VoIP or similar IP services.

In any event, even where section 251(a) is applicable, it imposes only a “duty” on telecommunications carriers “to connect directly *or indirectly* with . . . other telecommunications carriers.”⁵⁸ That language, written in the disjunctive, empowers the *carrier against whom*

⁵⁷ See Opposition of AT&T, *tw telecom inc. Petition for Declaratory Ruling Regarding Direct IP-to-IP Interconnection Pursuant to Section 251(c)(2) of the Communications Act*, WC Docket No. 11-119, at 3-8 (filed Aug. 15, 2011) (“AT&T *tw telecom* Opposition”); Comments of SBC Communications Inc., *IP-Enabled Services*, WC Docket No. 04-36, at 33-42 (filed May 28, 2004) (discussing IP-enabled services and VoIP); Reply Comments of SBC Communications Inc., *IP-Enabled Services*, WC Docket No. 04-36, at 22-26 (filed July 14, 2004) (same); *see also* Comments of Verizon and Verizon Wireless, *tw telecom inc. Petition for Declaratory Ruling Regarding Direct IP-to-IP Interconnection Pursuant to Section 251(c)(2) of the Communications Act, As Amended, for the Transmission and Routing of tw telecom’s Facilities-Based VoIP Services and IP-In-The-Middle Voice Services*, WC Docket No. 11-119, at 14-20 (filed Aug. 15, 2011) (“Verizon *tw telecom* Comments”); Comments of Alcatel-Lucent, *tw telecom inc. Petition for Declaratory Ruling Regarding Direct IP-to-IP Interconnection Pursuant to Section 251(c)(2) of the Communications Act*, WC Docket No. 11-119, at 6-8 (filed Aug. 15, 2011) (“Alcatel-Lucent *tw telecom* Comments”). AT&T incorporates these filings by reference here.

⁵⁸ 47 U.S.C. § 251(a)(1) (emphasis added and formatting altered).

section 251(a) is invoked to decide how to fulfill that duty—and, in particular, to decide whether to fulfill it through direct or indirect interconnection. The Commission may not override the clear statutory text and *itself* decide whether interconnection should be direct or indirect. A telecommunications carrier satisfies its “duty” under section 251(a) so long as it allows for indirect interconnection—*i.e.*, so long as it does not block traffic originated by the requesting carrier and delivered through an intermediary.⁵⁹ Indeed, that has been the Commission’s own consistent position since 1996. As it has explained, “telecommunications carriers should be permitted to provide interconnection pursuant to section 251(a) either directly or indirectly, based upon their most efficient technical and economic choices.”⁶⁰

b. Section 251(c) is inapplicable to IP-to-IP interconnection both because information service providers have no interconnection rights under subsection (c)(2) and, independently, because wireline broadband ISPs are not “ILECs”

Section 251(c)(2) requires *incumbent LECs* “to provide, for the facilities and equipment of any *requesting telecommunications carrier*, interconnection with the local exchange carrier’s network” “for the transmission and routing of telephone exchange service and exchange access.” 47 U.S.C. § 251(c)(2), (c)(2)(A) (emphasis added). That provision is inapplicable to IP-to-IP interconnection for at least three independent reasons. The first two relate to the status of the

⁵⁹ That is true regardless of whether the telecommunications carrier against whom section 251(a) is invoked is an ILEC, CLEC, IXC or other telecommunications carrier. To the extent a carrier demands *direct* interconnection from an ILEC, it may do so only pursuant to section 251(c)(2), and only in the specific circumstances identified there—*i.e.*, where the entity demanding such interconnection is a “telecommunications carrier” seeking interconnection “for the transmission and routing of telephone exchange service and exchange access” provided on a common carriage basis.

⁶⁰ First Report and Order, *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996; Interconnection between Local Exchange Carriers and Commercial Mobile Radio Service Providers*, 11 FCC Rcd 15499, 15991 ¶ 997 (1996) (“*Local Competition Order*”).

requesting party, while the third relates to the status of the party against whom section 251(c)(2) would be invoked.

First, as discussed, VoIP providers—as well as providers of other IP-based information services—are not “telecommunications carriers.” They therefore may not invoke interconnection rights under section 251(c)(2). Second, section 251(c)(2) is unavailable to VoIP providers because, even if they *were* “telecommunications carriers,” they would not be invoking this provision in order to provide the local services identified in section 251(c)(2)(A):

“telephone exchange service and exchange access.”⁶¹ As the Commission found in the *Vonage Order*, VoIP is an indivisibly interstate, *interexchange*-type service.⁶² And as the Commission concluded in 1996, “[a] telecommunications carrier seeking interconnection only for interexchange services is not within th[e] scope of the statutory language” and is therefore not entitled to seek interconnection under section 251(c)(2).⁶³ That is the correct—and indeed the only permissible—reading of the statutory text, which requires that the “*request[]*” to interconnect be *for the purpose* of “the transmission and routing of telephone exchange service and exchange access.” In other words, the requesting carrier must be “offering” those services and not merely receiving them in order to satisfy the statutory criteria for interconnection.⁶⁴

⁶¹ AT&T has previously explained this point in detail. See Reply Comments of AT&T, WC Docket Nos. 10-90 *et al.*, at 20 (filed May 23, 2011); *AT&T tw telecom Opposition* at 8-9 n.24; see also *Verizon tw telecom Comments* at 19-21; *Alcatel-Lucent tw telecom Comments* at 8-9.

⁶² See Memorandum Opinion and Order, *Vonage Holdings Corporation Petition for a Declaratory Ruling Concerning an Order of the Minnesota Public Utilities Commission*, 19 FCC Rcd 22404, 22415-16, 22423-24 ¶¶ 20, 31 (2004) (“*Vonage Order*”), *aff’d*, *Minn. PUC v. FCC*, 483 F.3d 570 (8th Cir. 2007).

⁶³ See *Local Competition Order*, 11 FCC Rcd at 15598-99 ¶ 191.

⁶⁴ As discussed in Section II.A below, the statutory text forecloses any alternative reading under which section 251(c)(2) is triggered simply because the party against whom that provision is invoked—*i.e.*, an “ILEC”—is *itself* providing “telephone exchange service and exchange access.” There is also no merit to the *FNPRM*’s suggestion (¶ 1390) that the Commission based

Third, the *other* IP network, against which interconnection rights would be invoked, would not qualify as an “ILEC” subject to section 251(c)(2)—or, for that matter, to *any* of the ILEC-specific obligations under section 251(c). Instead, it would be an IP-based *broadband information services provider* to which section 251(c) is simply inapplicable.

The term “incumbent local exchange carrier” means a “local exchange carrier” that either (1) falls within a defined list of companies operating in 1996 or (2) is a successor or assign of those companies. 47 U.S.C. § 251(h)(1). As an initial matter, the term does *not* include any corporate entity—including one affiliated with a legacy ILEC—that offers broadband Internet and managed IP services, which did not exist in the consumer market in 1996, by means of new fiber-based, packet-switched networks, which also did not exist in that market in 1996. Under no plausible interpretation could such an affiliate qualify as an ILEC’s “successor” or “assign.”⁶⁵

In addition, once an *existing* “ILEC” (or the affiliate of such an ILEC) stops offering “LEC” services within a given area, it will no longer be an “ILEC” subject to section 251(c)(2). As the *FNPRM* recognizes, the statutory definition of “ILEC” requires “that the entity *be* a ‘local exchange carrier’” and “remain[] a ‘local exchange carrier’” during the period in which any

this 1996 statutory interpretation on a policy desire to preserve access charge revenues; instead, the Commission properly found that the statutory language compelled that interpretation. In any event, that policy desire could not logically have affected the Commission’s interpretation of section 251(c)(2) in the first place. As the Commission elsewhere acknowledges (*Order* ¶ 765), section 251(g) independently preserves the access charge regime, overriding any contrary mandate in section 251, until the Commission decides otherwise.

⁶⁵ The typical circumstances today are thus readily distinguishable from those in *Association of Communications Enterprises. v. FCC*, 235 F.3d 662, 664 (D.C. Cir. 2001) (“*ASCENT*”). The *ASCENT* decision turned on the facts that the ILEC’s affiliate was offering the *same services* that its ILEC parent had previously offered and was using the *same equipment* that the parent had originally owned. *See id.* at 666-67, 668; *see also* Memorandum Opinion and Order, *Petition for Waiver of Pricing Flexibility Rules for Fast Packet Services*, 20 FCC Rcd 16840, 16842 ¶ 5 (2005) (applying *ASCENT* to affiliate offering services originally offered by the incumbent LEC and then “transferr[ed]” to the affiliate).

ILEC-specific regulation is applied.⁶⁶ Put differently, the entity must, in the Commission's words, be a "live LEC" in order to qualify as an ILEC.⁶⁷ But a "local exchange carrier" is defined as "any person that is engaged in the provision of telephone exchange service or exchange access." 47 U.S.C. § 153(32). For the reasons just discussed, VoIP falls outside those categories. And providers that offer information services (including VoIP) but not these legacy services are not LECs and therefore do not fall within the subset of LECs designated as "ILECs."⁶⁸ Finally, the Commission cannot get around this hurdle by invoking section 251(h)(2), entitled "treatment of comparable carriers as incumbents," because that provision, too, authorizes such treatment only for "a local exchange carrier (or class or category thereof)." *Id.* § 251(h)(2) (capitalization altered).

These outcomes make abundant policy sense. When Congress enacted the 1996 Act, ILECs had a nearly 100 percent share of the market for legacy "local exchange" services. As all communications services converge on an all-IP platform, consumers will buy those services not from obsolete categories of providers such as "ILECs," "CLECs," and "IXCs," but rather from *broadband providers of Internet access and other IP services*. There is no plausible claim that ILEC-affiliated broadband providers are "dominant" in *that* marketplace, which is increasingly the only relevant one. Indeed, in many areas (if not most) those providers have a much smaller market share than their cable competitors, as recent FCC figures confirm.⁶⁹ And even if it were appropriate to look only at (fixed) VoIP services in isolation, cable companies already have a

⁶⁶ *FNPRM* ¶ 1386 & n.2524 (emphasis added).

⁶⁷ *WorldCom, Inc. v. FCC*, 246 F.3d 690, 694 (D.C. Cir. 2001).

⁶⁸ See Section I.B.1.a, *supra*; 47 U.S.C. § 153(20) (defining "exchange access"); *id.* § 153(54) (defining "telephone exchange service").

⁶⁹ See FCC, Wireline Competition Bureau, *Internet Access Services: Status as of December 31, 2010*, at 28 Chart 10 (Oct. 2011), http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-310261A1.pdf.

commanding lead over their telco counterparts. One recent analysis found that “there were about 26m VoIP subscribers riding on cable connections at the end of 2010, and just more than 2.5m ILEC/CLEC VoIP customers.”⁷⁰ In this environment, it would be the height of arbitrariness to single out ILEC-affiliated broadband providers and treat them as though they were monopolists, whereas in fact they are often second-place competitors that must fight tooth and nail to keep *other* providers from becoming monopolists in their own right.⁷¹

2. No Provision Outside of Section 251 Authorizes the Commission to Regulate IP-to-IP Interconnection

The *FNPRM* seeks comment on whether the Commission could derive authority to regulate IP-to-IP interconnection from a variety of sources other than section 251, including section 201, 256, or 706. None of those provisions could fill the jurisdictional void.

Section 201 places certain duties on “common carrier[s],” including the duty to interconnect with “other carriers” if the Commission “finds such action necessary or desirable in the public interest.” 47 U.S.C. § 201. By its terms, this provision does not authorize the Commission to impose such common carrier regulations on information service providers, private carriers, or any other entity that is not a “common carrier.” As discussed, moreover, the Communications Act affirmatively *bars* the Commission from “treat[ing]” such an entity “as a common carrier” insofar as it is engaged in the provision of anything other than a Title II telecommunications service. *Id.* § 153(51). Generalized interconnection obligations are a form of common carrier regulation: they require each carrier to hold itself out to all comers for the

⁷⁰ See Richelle Elberg, *Communications Industry Forecasts 2011-2020: ILEC/CLEC and Cable VoIP Lines*, The ILEC Advisor (Oct. 20, 2011), <http://www.jsicapitaladvisors.com/the-ilec-advisor/2011/10/20/communications-industry-forecast-2011-2020-ilecclec-and-cabl.html>.

⁷¹ Indeed, if any class or category of broadband VoIP providers occupies a position in the market that is comparable to that of an ILEC, it is cable broadband providers—not ILEC-associated broadband VoIP providers.

carriage of traffic originated on their networks.⁷² Indeed, section 251(a) makes interconnection *the* common obligation of all “telecommunications carriers,” a term that, as noted, is synonymous with “common carriers,” and the Commission has never imposed generalized interconnection rules on entities *other* than common carriers. In short, the Commission would violate section 153(51) if it forced information service providers to provide interconnection as though they were common carriers. *A fortiori*, when the providers on *both* sides are offering their subscribers information services—as is generally the case in any IP-to-IP interconnection—the statute prohibits the FCC from treating *either* provider as a “common carrier” and thus from imposing generalized interconnection duties on either.

Nor does anything in the Clayton Act, in combination with section 201 or otherwise, allow the Commission to exercise authority over IP-to-IP interconnection. *Cf. FNPRM* ¶ 1354. The Clayton Act merely gives the FCC antitrust enforcement authority over certain “common carriers” engaged in communications. *See* 15 U.S.C. § 21. Nothing in the Act authorizes the Commission to adopt *prospective rules* for the exchange of traffic, as the *FNPRM* envisions, let alone impose such rules on providers that are not “common carriers.” In any event, quite apart from those jurisdictional limitations, the Clayton Act reaches only anticompetitive conduct. Given that most IP-to-IP interconnection for the past two decades has been indirect rather than direct (*see* Section I.A.3, *supra*), there is no conceivable basis for concluding that an IP network acts “anticompetitively” when it refuses to interconnect directly with another IP network.

⁷² *See, e.g., Ad Hoc Telecomms. Users Comm. v. FCC*, 572 F.3d 903, 909 (D.C. Cir. 2009) (calling “interconnection” a “basic Title II common-carrier obligation[]” along with the obligation to charge just and reasonable rates); *CSI Aviation Servs., Inc. v. U.S. Dep’t of Transp.*, 637 F.3d 408, 415 (D.C. Cir. 2011) (key question in identifying common carrier is whether carrier “holds itself out to the public and is willing to take all comers”) (internal quotation marks omitted).

Section 256(b)—entitled “Commission Functions”—is similarly incapable of supplying regulatory authority in this context. It provides, in part, for the Commission to “establish procedures for . . . oversight of coordinated network planning . . . for the effective and efficient interconnection of public telecommunications networks.” 47 U.S.C. § 256(b)(1). But all of the “commission functions” related to interconnection apply only with respect to “telecommunications service[s].” *See id.* §§ 256(b)(1), (2)(A), & (d). The Commission may not invoke section 256 to regulate interconnection between two providers of information services. In any event, section 256’s savings clause provides that “[n]othing in this Section shall be construed as expanding or limiting any authority that the Commission may have under law in effect before February 8, 1996.” *Id.* § 256(c). As the D.C. Circuit recently concluded, the clause means what it says: section 256 is not an independent grant of authority.⁷³

Section 706 also cannot supply the necessary authority. Section 706(a) instructs the Commission to encourage the deployment of advanced services through, among other things, “regulatory forbearance . . . or other regulating methods that remove barriers to infrastructure investment,” while section 706(b) directs the Commission to “determine whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion,” and, if not, to “take immediate action to accelerate deployment of such capability by removing barriers to infrastructure investment and by promoting competition in the telecommunications market.” 47 U.S.C. §§ 1302(a), (b).

Whatever section 706 allows the Commission to do, it does not authorize it to regulate long-unregulated arrangements for the exchange of IP-based traffic. As discussed in Section I.A.1, the Internet has prospered precisely because the federal government has *declined* to

⁷³ *See Comcast Corp. v. FCC*, 600 F.3d 642, 659 (D.C. Cir. 2010).

regulate IP-to-IP interconnection. Imposing such regulation now would hinder, not promote, the core purpose of section 706—the continued growth of the broadband Internet. Indeed, the *FNPRM* does not even attempt to explain how the proposed measures could possibly promote the statutory policies expressed in section 706(a) and (b). In any event, even if the Commission could supply such an explanation, the specific prohibition of 47 U.S.C. § 153(51), discussed above, would independently preclude the Commission from interpreting the general terms of section 706 to impose generalized interconnection obligations or other forms of common carrier regulation on information service providers.

3. The Commission Also Lacks Ancillary Authority to Compel IP-to-IP Interconnection

Finally, in the absence of direct statutory authority, the Commission also lacks ancillary authority to regulate IP-to-IP interconnection. The Commission “may exercise ancillary jurisdiction only when two conditions are satisfied: (1) the Commission’s general jurisdictional grant under Title I [of the Communications Act] covers the regulated subject and (2) the regulations are reasonably ancillary to the Commission’s effective performance of its statutorily mandated responsibilities.”⁷⁴ Here, any IP-to-IP interconnection mandate would not be reasonably ancillary to the exercise of any of the Commission’s statutory duties, and the Commission does not even attempt to explain how it could be.

Indeed, any theory of ancillary authority would be logically incoherent. A key objective of this proceeding is to phase out Title II PSTN services in favor of an all-IP communications ecosystem, in which voice becomes simply one information service among many riding on top of a unified IP platform. As discussed, the best way to hasten the transition to that ecosystem is to leave IP-to-IP interconnection unregulated. But even if affirmative regulatory measures could

⁷⁴ *Id.* at 646 (quoting *Am. Library Ass’n v. FCC*, 406 F.3d 689, 691-92 (D.C. Cir. 2005)).

somehow facilitate rather than obstruct that transition, they still could not be justified as “ancillary to the Commission’s effective performance” of Title II regulatory duties, because there will be no relevant duties for them to be ancillary *to*. The all-IP end state is a world in which voice services are no longer governed by Title II, just as the services of Vonage or Skype are not governed by Title II today. The Commission cannot logically invoke “ancillary” authority, ostensibly grounded in a need to protect its Title II authority, to expedite the transition to a class of services over which it *lacks* Title II authority.⁷⁵

In any event, as the Supreme Court held in *FCC v. Midwest Video Corp.*,⁷⁶ the FCC’s ancillary authority is cabined by the substantive provisions of the Communications Act, and it cannot assert such authority to act in a manner “antithetical to a basic regulatory parameter established” in the statute.⁷⁷ Again, 47 U.S.C. § 153(51) bars the Commission from treating any provider, including a “telecommunications carrier,” as a “common carrier” except to the extent that it is providing a Title II “telecommunications service.” As explained above, this provision thus precludes the Commission from imposing generalized interconnection obligations on providers of information services, including VoIP and broadband Internet access.

4. The Commission Similarly Lacks Authority to Impose a Good-Faith Negotiation Requirement for IP-to-IP Interconnection

The Commission separately asks whether it may impose a “good-faith” negotiation requirement to govern requests for IP-to-IP interconnection. *See FNPRM* ¶¶ 1351-58. As an initial matter, since the privatization of the Internet backbone in the early 1990s, many thousands

⁷⁵ *Id.* Nor could various policy statements in the Communications Act, untethered to any specifically delegated powers, provide the Commission with ancillary jurisdiction. “[P]olicy statements alone cannot provide the basis for the Commission’s exercise of ancillary authority.” *Id.* at 654.

⁷⁶ 440 U.S. 689, 700-02 (1979).

⁷⁷ *Am. Library Ass’n*, 406 F.3d at 702 (internal quotation marks omitted).

of IP networks have in fact negotiated peering and transit arrangements in good faith, all without regulatory compulsion, and these negotiations have produced the modern Internet. The Commission need not *require* such good-faith negotiations as a matter of regulatory obligation—and, indeed, could paradoxically deter such negotiations simply by compelling them. Such a requirement would contain the implicit prospect of regulatory intervention, and it would therefore distort each party’s bargaining incentives, because either party might hope to extract a better outcome from the regulatory process than from private negotiations.

In any event, because (as discussed above) no statutory provision authorizes the Commission to regulate interconnection between information service providers, the Commission also lacks authority to require good faith negotiations for such interconnection. Similarly, since the Commission has no statutory authority to mandate IP-to-IP interconnection, the Commission has no statutory responsibilities to which a good-faith negotiation requirement could be “ancillary.” Section 251(a)(1), on which the *FNPRM* relies (§ 1352), would be a particularly inappropriate basis for asserting such authority, whether ancillary or direct. In section 251(c)(1), Congress required carriers to negotiate in good faith in the limited circumstances where section 251(c)(2) imposes substantive interconnection obligations. But Congress elected *not* to impose any similar “good faith” requirement under the far more general terms of section 251(a)(1), which, as discussed above, are inapplicable to IP-to-IP interconnection in any event. Because “it is generally presumed that Congress acts intentionally and purposefully when it includes particular language in one section of a statute and omits it from another,”⁷⁸ the Commission

⁷⁸ *BFP v. Resolution Trust Corp.*, 511 U.S. 531, 537 (1994); *see also* Declaratory Ruling, *Petition of CRC Communications of Maine, Inc. and Time Warner Cable Inc. for Preemption Pursuant to Section 253 of the Communications Act, as Amended et al*, 26 FCC Rcd 8259, 8268 ¶ 17 n.58 (2011) (“*Interconnection Clarification Order*”) (“[C]ompetitive LECs are not subject

would violate clear congressional intent if it sought to base a good-faith requirement on section 251(a) despite Congress's conspicuous decision not to include such a requirement there.

II. THE COMMISSION SHOULD CLARIFY TWO ISSUES RELATING TO VOIP-PSTN INTERCONNECTION

A. VoIP Providers Are Not “Telecommunications Carriers” Eligible to Invoke Section 251 Interconnection Rights with Circuit-Switched ILECs

As discussed, the Commission lacks authority, under section 251 and otherwise, to regulate interconnection between two IP networks that provide VoIP or other information services to their respective customers. For many of the same reasons (and those discussed below), retail VoIP providers are further ineligible to invoke section 251 rights of interconnection even with circuit-switched ILEC networks. As an initial matter, that legal conclusion will likely have only limited practical significance. The Commission has already concluded that CLECs providing “exchange access” to retail VoIP providers qualify as telecommunications carriers entitled to interconnect with traditional telecommunications carriers (such as circuit-switched ILECs) under section 251.⁷⁹ AT&T does not contest this determination, at least with respect to a state-certified CLEC that is a bona fide common carrier and is therefore not simply the exclusive business partner of a single retail VoIP provider.

Retail VoIP providers, however, are not *themselves* entitled to interconnection under section 251, even with circuit-switched ILECs and other telecommunications carriers. As explained above, sections 251(a) and 251(c) apply only when the party “requesting” interconnection is a “telecommunications carrier.” A VoIP provider does not so qualify, and it therefore cannot invoke interconnection rights under either provision.

to the section 251(c)(1) obligation to negotiate in good faith . . . , since the obligations imposed by section 251(c) apply only to negotiations involving incumbent LECs[.]”).

⁷⁹ FNPRM ¶ 1382 (citing *Interconnection Clarification Order*, 26 FCC Rcd at 8273-74 ¶¶ 26-27).

In addition, section 251(c)(2) is subject to a further limitation: the requesting carrier must also be providing local services (“telephone exchange service and exchange access”) rather than interexchange services. As discussed, that limitation independently bars VoIP providers from invoking section 251(c)(2) rights because, as the Commission has determined, they provide indivisibly interstate, interexchange-type services. *See* Section I.B.1, *supra*. For that reason, even if VoIP providers were “telecommunications carriers,” which they are not, they still could not invoke section 251(c)(2) rights to interconnect with circuit-switched ILECs.

Some commenters try to avoid that conclusion on the ground that, for section 251(c)(2) to apply, it is sufficient for the *ILEC*—not the *requesting carrier*—to be offering “telephone exchange service and exchange access.” *See FNPRM* ¶ 1390 & n.2542. That interpretation flatly contradicts the statutory text, as the Commission determined in the *Local Competition Order*.⁸⁰ It would also render subsection (c)(2)(A) superfluous. A local exchange carrier by definition offers “telephone exchange service or exchange access.” 47 U.S.C. § 153(32). And since section 251(c)(2) applies only to LECs—and ILECs in particular—*any* interconnection under that provision would necessarily involve the provision of those services. Yet it is “[a]n endlessly reiterated principle of statutory construction . . . that all words in a statute are to be assigned meaning, and that nothing therein is to be construed as surplusage.” *Qi-Zhuo v. Meissner*, 70 F.3d 136, 139 (D.C. Cir. 1995).

B. The Commission Should Encourage an Expedient Transition to an All-IP Environment by Establishing a PSTN Sunset Date

Although the telecommunications ecosystem is moving quickly to an all-IP environment, many millions of consumers remain on circuit-switched PSTN networks. As the *FNPRM* notes,

⁸⁰ *Local Competition Order*, 11 FCC Rcd at 15598-99, ¶ 191; *see* page 38 and note 64, *supra*.

that fact raises a key question about whether and how interconnecting IP and PSTN networks should share the costs of “media gateways,” the equipment that converts IP signals to circuit-switched TDM signals and vice versa.⁸¹ The Commission can efficiently resolve those questions by setting a date certain for an official PSTN sunset, after which any TDM networks would have no regulatory entitlement to interconnection. As the overwhelming majority of customers begin subscribing to VoIP rather than TDM services, the prospect of a PSTN sunset will encourage all remaining TDM networks to migrate promptly to IP technologies to facilitate efficient interconnection with IP networks and their larger aggregate subscriber base. At a minimum, it will prompt them to arrange for the provision of IP-TDM gateways (either their own or those supplied by their chosen transit providers). This approach will create certainty for the industry and, compared to any immediate cost-shifting rules, will avoid any abrupt and destabilizing changes in regulatory policy.

To give the industry adequate time to prepare for this transition, we recommend that the Commission establish a PSTN sunset date of 2018, as recommended by the Commission’s Technology Advisory Council.⁸² Significantly, the sunset we are asking the Commission to announce would not require legacy carriers to *discontinue* the use of circuit-switched networks. Instead, we are asking the Commission to declare the date on which, among other things, all such

⁸¹ See, e.g., *FNPRM* ¶ 1341. A number of non-ILEC entities, such as Inteliquent (*i.e.*, Neutral Tandem) and HyperCube, provide these gateway services, and there would thus be no policy-based (let alone legal) rationale for forcing ILECs to deploy such gateways themselves. *Cf. id.* ¶ 1369 (noting that “[s]ome commenters contend that the Commission should require incumbent LECs to directly interconnect on an IP-to-IP basis”). Instead, the relevant question is how the interconnecting parties should bear the costs of those services, no matter who physically arranges for them.

⁸² Technology Advisory Council, *Status of Recommendations*, at 11, 15-16 (June 29, 2011), <http://transition.fcc.gov/oet/tac/TACJune2011mtgfullpresentation.pdf>; see Rich Karpinski, *FCC considering exploring ‘end dates’ for the PSTN*, Connected Planet Online (July 7, 2011), <http://blog.connectedplanetonline.com/unfiltered/2011/07/07/fcc-considering-exploring-end-dates-for-the-pstn/>.

networks can no longer invoke regulatory interconnection rights and will bear full responsibility for the costs of continuing to use an obsolete circuit-switched technology while the rest of the communications ecosystem has converged onto a unified IP platform. Confronting PSTN networks with the prospect of those outcomes will, in the *FNPRM*'s words, appropriately "encourage the transition to IP-to-IP interconnection where efficient."⁸³ The Commission should nonetheless hold open the option of intervening if, for any reason, particular PSTN networks appear not to be responding adequately to the IP transition incentives created by the prospect of this sunset.

Some commenters urge the Commission to adopt a far more radical approach, untethered to any PSTN sunset, under which all ILECs would have to bear the entire cost of media gateways *immediately*. See *FNPRM* ¶¶ 1341, 1361. For example, T-Mobile and Sprint would require each ILEC to "establish" a point of interconnection in each of its states specifically to receive IP-based voice traffic and would force the ILEC to "provide at its own cost any necessary packet-TDM conversion."⁸⁴ That proposal is as unlawful as it is extreme. Section 251(c)(2) requires interconnection that is "at least equal in quality" to that provided by the LEC to itself or others. See 47 U.S.C. § 251(c)(2)(C). As the Eighth Circuit has held, that provision allows other carriers access "only to an incumbent LEC's *existing* network—not to a yet unbuilt superior one."⁸⁵ The Commission would violate that holding if it forced ILECs to cover the costs of new media gateways long before any PSTN sunset, and thus long before the date on which all carriers will

⁸³ *FNPRM* ¶ 1341.

⁸⁴ See Letter from Kathleen O'Brien Ham, T-Mobile USA, Inc., and Charles W. McKee, Sprint Nextel Corp., to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-92, at 2 (filed Jan. 21, 2011).

⁸⁵ *Iowa Utils. Bd. v. FCC*, 120 F.3d 753, 813 (8th Cir. 1997), *rev'd in part on other grounds*, 525 U.S. 366 (1999) (emphasis in original).

be presumed to have upgraded their networks to IP.⁸⁶ Indeed, with respect to most consumers, ILECs are still offering circuit-switched rather than IP-based voice services. They therefore have not deployed, within their ILEC networks, the IP technology needed to exchange traffic in native IP format.

Finally, because the Commission cannot require ILECs to upgrade their networks under section 251(c)(2), it cannot logically dictate that result through other provisions of the Act. Section 251(c) defines the “[a]dditional [o]bligations” of incumbent LECs and provides that those duties are “*in addition to*” the other obligations placed on LECs generally. Consistent with this statutory language, the Commission long ago determined that states may not impose the ILEC-specific obligations of section 251(c) on non-incumbent LECs.⁸⁷ It would be both illogical and unlawful for the FCC to impose *greater* interconnection obligations under those parts of the Communications Act, such as section 251(a), that apply generally to all telecommunications carriers.

III. THE COMMISSION SHOULD ADOPT A RATIONAL BILL-AND-KEEP FRAMEWORK FOR PSTN TRAFFIC THAT ENSURES EFFICIENT RECOVERY OF NETWORK COSTS

Communications networks have costs. Carriers must recover those costs somehow, whether from their own end users, from other carriers (and ultimately their end users), or through

⁸⁶ Forcing ILECs to incur the costs of new media gateways before the PSTN sunset also would be unfair and arbitrary because ILECs in many cases have been forced to maintain and operate their TDM-based networks by carrier-of-last-resort and other state (and federal) regulatory requirements. The Commission cannot reasonably require ILECs to bear those costs in order to terminate the IP traffic of providers with no such obligations until, at a minimum, ILECs are no longer required to bear the costs of maintaining those legacy networks (or to comply with the full panoply of regulatory obligations applicable to those networks) while struggling to invest billions of dollars to build next-generation broadband networks to compete in an all-IP world.

⁸⁷ See *Local Competition Order*, 11 FCC Rcd at 16109-10 ¶ 1247; see also *Interconnection Clarification Order*, 26 FCC Rcd at 8268 ¶ 17 n.57 (“Section 251(a) imposes relatively limited obligations on all telecommunications carriers; section 251(b) imposes moderate duties on local exchange carriers; and section 251(c) imposes more rigorous obligations on incumbent LECs.”).

universal service support. In the *Order*, the Commission adopted a bill-and-keep regime for PSTN traffic, under which terminating carriers will rely chiefly on their own end users for recovery of their network costs. That cost-recovery regime will be far more efficient than the existing “calling party’s network pays” system, which partially shields each PSTN network from direct accountability to its own end users, for whom it must compete, by permitting it to recover many of its network costs from other carriers and thus *their* end users.

That said, the shift to bill-and-keep obviously will not eliminate intercarrier compensation altogether. Every coherent bill-and-keep proposal has established a default point on each terminating carrier’s network—known as the network “Edge”—that marks where the sending carrier’s financial obligations end and the terminating carrier’s begin.⁸⁸ Although the terminating carrier is responsible for the costs of delivering traffic from its Edge to its customers, the sending carrier (*i.e.*, the originating carrier for non-access traffic or the IXC for access traffic) is responsible for the costs of delivering that traffic *to* the terminating carrier’s Edge.⁸⁹

When the sending and terminating carriers physically interconnect at the network Edge, no money changes hands for the termination of traffic, and each carrier bears its own costs.⁹⁰ But in some cases, carriers will not interconnect physically at the network Edge. In that event,

⁸⁸ See, *e.g.*, Ex Parte Brief of the Intercarrier Compensation Forum in Support of the Intercarrier Compensation and Universal Service Reform Plan, *Developing a Unified Intercarrier Compensation Regime*, CC Docket No. 01-92, at 20 n.35 (filed Oct. 5, 2004) (“*ICF Legal Brief*”); Patrick DeGraba, *Bill and Keep at the Central Office As the Efficient Interconnection Regime*, FCC Office of Plans and Policy, OPP Working Paper No. 33, at 8-13 (Dec. 2000), http://transition.fcc.gov/Bureaus/OPP/working_papers/oppwp33.pdf (“*DeGraba Paper*”).

⁸⁹ The *FNPRM* appears to recognize that this is an essential element of a bill-and-keep regime. *FNPRM* ¶ 1320.

⁹⁰ For present purposes, we are ignoring universal service disbursements. Of course, where price regulation bars full recovery of a carrier’s costs from end users, carriers must be permitted to recover their costs through universal service mechanisms, or must be relieved of any service obligations.

the sending carrier still has the financial obligation to deliver its traffic to the terminating carrier's Edge, but it can satisfy that obligation in a variety of ways. It can deploy new infrastructure of its own; it can lease infrastructure from another carrier; it can purchase switched transport services by the minute; or it can use an amalgam of these options. And if it decides to rely on another carrier rather than building out its own network, it can choose among any number of alternative wholesale providers. That wholesale provider might be the terminating carrier, it might be a third-party alternative, or it might be some combination of the two. But no matter which of these options the sending carrier chooses, and no matter which wholesale provider it purchases services from, the financial obligation remains with the sending carrier. It must pay all the costs of transporting traffic to the terminating carrier's Edge; indeed, that is simply what it means to designate an Edge.

In the subsections that follow, we flesh out these principles. We also explain how they would apply in the context of AT&T's proposed bill-and-keep framework for PSTN traffic, which is set out in detail as Appendix A to these comments. First, we explain why, under AT&T's *or any* bill-and-keep framework, there will be a continuing need for carriers to reimburse each other for the costs of certain network facilities and functions, and we explain how those intercarrier charges should be set. *See* Section III.A. Next, we explain why the Commission should adopt AT&T's proposed definitions of the Edges for different types of communications networks. *See* Section III.B. Finally, we address other implementation issues, including the proper treatment of originating access charges and ways to facilitate the transition of all intercarrier charges from tariffs to bilateral agreements. *See* Sections III.C and III.D.

One caveat is critical at the outset. This Section, and AT&T's proposed bill-and-keep framework, relate *only* to the PSTN; they have no relevance to the separate world of IP-to-IP

interconnection, including Internet peering and transit. As discussed in Section I, IP-to-IP interconnection has functioned efficiently for twenty years without any regulatory intervention at all, and it will continue to function efficiently as the PSTN approaches its sunset and all electronic communications converge on the IP platform. Regulatory mandates that work for the PSTN, including bill-and-keep and its associated Edge complexities, have absolutely no role to play on the unregulated Internet, with its multiplicity of established options for transit and peering (both settlement-free and paid).

A. Under Any Coherent Bill-and-Keep Framework, Carriers Will Still Exchange Compensation for Various Network Functions, Including Intermediate Transit and Transport Services

In the *FNPRM*, the Commission asks about the proper regulatory treatment of specific network functions, including dedicated transport, switched transit,⁹¹ and tandem switching and common transport when the terminating carrier does not own the tandem.⁹² But whether a particular network element or function must be provided for free to the sending carrier—*i.e.*, “transitioned to bill-and-keep,” in the Commission’s words⁹³—should not hinge on whether it is switched or dedicated, or whether it is called “transport” or “transit” today. Instead, a carrier’s entitlement to compensation should hinge on *where* a particular network function is provided (*i.e.*, inside or outside the terminating carrier’s network Edge) and the identity of the carrier providing it (*i.e.*, the sending carrier, the terminating carrier, or a third-party carrier).

⁹¹ In this Section, we refer only to circuit-switched transit *on the PSTN*. As discussed in Section I.A above, the term “transit” also is used to describe an intermediate provider connecting two IP networks. The services provided are very different in the two contexts, and they should not be confused.

⁹² *FNPRM* ¶¶ 1297, 1306-14. As discussed below, there is no meaningful distinction between “transit” and tandem switching and common transport when neither the terminating carrier nor the sending carrier owns the tandem. *See* pages 58-59, *infra*.

⁹³ *FNPRM* ¶ 1307.

Specifically, a terminating carrier should be barred from charging a sending carrier (or a third-party carrier) for any type of transport or switching inside its own network Edge. But if a sending carrier relies on a third party or the terminating carrier in order to reach that Edge, it must pay that other carrier—which, in effect, it has hired as a subcontractor—for performing that function. This concept should not be controversial; it simply encapsulates what it means to designate a point on the terminating carrier’s network as the “Edge.”

1. Third-Party Providers That Bridge the Gap Between Sending and Terminating Carriers Must Be Compensated for the Services They Provide

We begin with an obvious point: in cases of indirect interconnection, the Commission cannot rationally “transition” rates for transit and other third-party services “to bill-and-keep” because, by definition, those third parties have no end users involved in the calls at issue and thus no relevant retail customers from whom they can recover the costs of providing those services.

Two carriers may interconnect directly or indirectly. In *direct* interconnection, the sending carrier—which may be the originating carrier or an IXC—hands off traffic directly to a terminating carrier. As the *Order* explains, bill-and-keep is a sensible approach to network cost recovery in cases of direct interconnection at the network Edge.⁹⁴ Among other considerations, it is more efficient to require the terminating carrier to recover its costs directly from its own end-user customers—who choose to subscribe to that carrier’s network—than to permit recovery of those costs indirectly from other carriers and, ultimately, from those carriers’ end users.⁹⁵

⁹⁴ *Order* ¶¶ 737-38, 741-59. See also *ICF Legal Brief* at 20-26; Comments of the Intercarrier Compensation Forum, *Developing a Unified Intercarrier Compensation Regime*, CC Docket No. 01-92, at 11-16, 20-30 (filed May 23, 2005); Comments of SBC Communications Inc., *Developing a Unified Intercarrier Compensation Regime*, CC Docket No. 01-92, at 4-15 (filed May 23, 2005).

⁹⁵ *Order* ¶¶ 737-38, 742.

Today's regime inefficiently permits terminating carriers to shift their imprudently incurred costs (or costs that regulation keeps them from recovering from their end users) to sending carriers. By contrast, bill-and-keep requires terminating carriers to pass their costs on to their own customers, thereby exposing inefficient carriers to the discipline of the market.⁹⁶

This core rationale for bill-and-keep has no bearing on the question of compensation for intermediate third-party carriers in cases of *indirect* interconnection. In that context, the sending carrier hands off traffic to the third-party provider, which transports it over its own network and in turn hands it off to the terminating carrier. The third-party provider may perform different types of switching and transmission functions in the process, and those functions may go by different names ("transit," "dedicated transport," "special access," *etc.*). But the basic concept is the same in all cases: the sending carrier has hired this third party to fulfill its financial obligation to deliver traffic to the terminating carrier's Edge. By definition, this third-party provider has no contractual relationship with either the calling party or the called party, and it therefore may not recover from either one the costs that it incurs in providing these third-party services.⁹⁷ Instead, its only relevant customer is typically the sending carrier, from whom it must recover its costs; and the sending carrier is then free to pass through those costs to its own subscribers. This financial arrangement gives the sending carrier appropriate incentives *either* to build out its network *or* to outsource the same network functions to a third party, depending on whether it is more economically efficient to build or to buy.

⁹⁶ See, e.g., *id.* ¶ 738; see also *id.* ¶ 742 ("Bill and keep brings market discipline to intercarrier compensation because it ensures that the customer who chooses a network pays the network for the services the subscriber receives.").

⁹⁷ A retail interexchange carrier does have an independent relationship with the end-user subscriber who initiates a long-distance call, and thus it is appropriately treated as a sending carrier. Our discussion here relates only to third-party providers that have no relevant retail relationship with the calling or called party.

The Commission would destroy those incentives if it forced third-party intermediaries to perform these functions for free, with no hope of cost recovery from anyone who is involved in the relevant traffic exchanges (and who thus can be said to “cause” the relevant costs). In particular, transitioning these intermediate third-party services “to bill-and-keep” would give sending carriers overwhelming incentives to stop any further build-out of their networks to the terminating carrier’s Edge, because they could now obtain all the same objectives without paying anything. And the third-party conscripts forced to provide these intermediate services would be left holding the bag for all the costs they incur in the process of serving the sending carrier. Of course, many third-party carriers have end-user customers of their own, to whom they provide various retail services. But there is no economically rational justification for imposing on those *retail* customers the costs of *wholesale* services designed to support calls between *other carriers’* retail customers. The third-party carrier’s retail customers are by definition not parties to any of the calls at issue; they do not cause any of the costs of those calls; and they derive no benefit from those calls.

Finally, if the Commission required a designated third-party intermediary—presumably the largest regional ILEC—to supply these services for free, it would immediately undermine the competitive position of that intermediary’s competitors. As discussed below, ILECs face strong competition in the market for intermediate services, from providers as diverse as Level 3, Inteliquent (formerly Neutral Tandem), and HyperCube. These are highly efficient competitors, but they cannot compete with free. If the Commission “transitioned to bill-and-keep” for all intermediate services, it would deny these competitive carriers (and not just their ILEC counterparts) any compensation whatsoever for performing services that generate real network

costs, and it would drive them from this market. The Commission’s goal in this proceeding should be to promote competition, not snuff it out.

Of course, these points address only whether a third-party carrier should be entitled to *any* compensation for the services it provides. It does not address whether the amount of that compensation should be *regulated*. As we next discuss, it should not be; for nearly all services provided by third parties, the competitive marketplace, and not the FCC or individual state commissions, should set the applicable rates.

Switched (“transit”) services (both access and non-access). A switched transit provider is a supplier of switching and transport services that has no independent relationship with either the calling or called parties. The switched transit provider routes calls that it receives from another carrier through its network and delivers those calls to the terminating carrier serving the called party. The most common form of switched transit service is “tandem transit service,” where the third-party provider supplies tandem switching and common transport from its own tandem to a point of interconnection on the terminating carrier’s network (often an end office or equivalent switching facility). Although the term “transit” is traditionally used to describe this function in the context of local (non-access) traffic, third-party intermediaries perform the same network functions to route long-distance (access) calls as well, often over the same facilities. In the latter context, these functions can go by various other names, including “tandem switching and common transport” and “jointly provided access.”⁹⁸ This Section addresses the proper regulatory treatment of the underlying network function—all third-party switched services that

⁹⁸ See *FNPRM* ¶ 1311 (“[A]lthough transit is the functional equivalent of tandem switching and transport, today transit refers to non-access traffic, whereas tandem switching and transport apply to access traffic. As all traffic is unified under section 251(b)(5), the tandem switching and transport components of switched access charges will come to resemble transit services in the reciprocal compensation context where the terminating carrier does not own the tandem switch.”).

indirectly interconnect the sending and terminating networks—despite the confusing proliferation of names that those services have been given in various regulatory contexts. For simplicity, we will use “switched transit” as a generic term to describe this function as it is used in both access and non-access contexts.⁹⁹

As an initial matter, the Commission has no *legal* authority to regulate the rates for these switched transit services under the 251/252 framework. Such services are not subject to rate regulation under sections 251(b)(5) and 252(d)(2) for the simple reason that those provisions relate only to compensation for the “transport *and termination*” of traffic, and by definition intermediate third parties do not “terminate” traffic. 47 U.S.C. § 251(b)(5) (emphasis added). Indeed, the Commission’s existing regulations already make clear that “transport,” as used in section 251(b)(5), includes only situations in which the carrier providing the transport is also the terminating provider.¹⁰⁰ In particular, “[t]he reciprocal compensation provisions of the Act address the exchange of traffic between an originating carrier and a terminating carrier, but the Commission’s reciprocal compensation rules do not directly address the intercarrier compensation to be paid to the transit service provider.”¹⁰¹

⁹⁹ See *id.* ¶¶ 1306-14. Of course, where the carrier that owns the relevant tandem switch is also serving the calling or called party, there are no “switched transit” services offered by an intermediate carrier. If the sending carrier owns the tandem switch (and the terminating carrier does not), then it cannot charge the terminating carrier for the tandem switching and shared transport functions because (under AT&T’s proposal) the terminating carrier’s Edge is its own end office, and the sending carrier must use these functions to reach that Edge. Similarly, if the carrier that owns the tandem switch is the *terminating* carrier, and if (as AT&T proposes) that carrier’s Edge is defined as the tandem switch, that carrier will simply recover the costs of the underlying tandem-switching and transport functions from its customers, who are the called parties served by that tandem. These points all hold true in both access and non-access contexts.

¹⁰⁰ 47 C.F.R. § 51.701; see also *Atlas Tel. Co. v. Okla. Corp. Comm’n*, 400 F.3d 1256, 1261 (10th Cir. 2005) (“Under the Act, reciprocal compensation is based solely on the costs of transport and termination incurred by the terminating provider.”).

¹⁰¹ See Further Notice of Proposed Rulemaking, *Developing a Unified Intercarrier Compensation Regime*, 20 FCC Rcd 4685, 4737-38 ¶ 120 (2005).

Switched transit services also do not qualify as direct “interconnection” within the scope of sections 251(c)(2) and 252(d)(1) and the Commission’s associated TELRIC rules. As the Commission has explained, “the term ‘interconnection’ under section 251(c)(2) refers only to the physical linking of *two networks* for the *mutual exchange* of traffic.”¹⁰² Thus, the duty of an ILEC to provide “interconnection” under section 251(c)(2) is limited to providing a direct link to that ILEC’s *own network*. That duty does not include providing intermediate routing or other “services” between two other carriers’ networks, as in the switched transit context.¹⁰³ Thus, in the *Virginia Arbitration Order*, the Wireline Competition Bureau noted that the Commission has never required incumbent LECs to provide transit service under section 251(c)(2).¹⁰⁴

There is also no legitimate policy justification for regulating switched transit services, whether provided by ILECs or anyone else, because these services are now highly competitive.¹⁰⁵ For example, Neutral Tandem (now known as Inteliquent), recently reported that it is operating in 189 markets, including 42 that it added in 2010 alone.¹⁰⁶ It also noted that it “has the ability to route local tandem transit traffic between more than 500,000,000 telephone

¹⁰² *Local Competition Order*, 11 FCC Rcd at 15590 ¶ 176 (emphasis added); *see also* 47 C.F.R. § 51.5 (“Interconnection is the linking of two networks for the mutual exchange of traffic. This term does not include transport and termination of traffic.”).

¹⁰³ *See AT&T Corp. v. FCC*, 317 F.3d 227, 234-35 (D.C. Cir. 2003); *see also Competitive Telecomms. Ass’n v. FCC*, 117 F.3d 1068, 1071-72 (8th Cir. 1997).

¹⁰⁴ Memorandum Opinion and Order, *Petitions of WorldCom, Inc. Pursuant to Section 252(e)(5) of the Communications Act for Preemption of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon Virginia Inc. and for Expedited Arbitration, et. al.*, 17 FCC Rcd 27039, 27101 ¶ 117 (WCB 2002).

¹⁰⁵ *See, e.g., DeGraba Paper, supra* note 88, at 34 (noting that competition serves as a check on excessive transport prices).

¹⁰⁶ Neutral Tandem, Form 10-Q (Nov. 9, 2011), *available at* <http://biz.yahoo.com/e/111109/tndm10-q.html> (“*Neutral Tandem 10-Q*”); Comments of Neutral Tandem, *Connect America Fund et al.*, WC Docket Nos. 10-90 *et al.*, at 3 (filed Apr. 18, 2011) (“*Neutral Tandem 4/18/11 Comments*”).

numbers.”¹⁰⁷ Further, Neutral Tandem reported that, over the last several years, “competition from other non-ILEC carriers, including Level 3, HyperCube and Peerless Network” have caused it “to lose some traffic as well as significantly reduce certain rates.”¹⁰⁸ Among these competitors, Level 3 now boasts that it offers tandem transit service throughout the contiguous United States, and that its “broad voice portfolio is used by some of the most prominent players in the cable, wireless and telecommunications industries.”¹⁰⁹ AT&T’s bill-and-keep proposal would further invigorate such competition because it would encourage all terminating carriers to interconnect with transit providers and thus would enable more sending carriers to use competitive transit service to deliver their traffic to terminating carriers.¹¹⁰ By contrast, if the Commission began capping ILEC transit prices for the first time, it would undermine the market position of all these competitive transit providers.¹¹¹

All this said, the Commission has authority to address any unique concerns about individual switched transit rates pursuant to sections 201 and 202 of the Act. Those provisions enable the Commission to ensure that transit services are offered on just, reasonable, and non-

¹⁰⁷ *Neutral Tandem 4/18/11 Comments* at 3.

¹⁰⁸ *Neutral Tandem 10-Q*; see also *Neutral Tandem 4/18/11 Comments* at 3-5 (describing robust competition in the transit context).

¹⁰⁹ Level 3 Tandem Service — Streamline Your Long Distance and Toll Free Connections, available at http://cdn1.level3.com/prod/App_Data/Replicated/MediaFiles/2/6/6/%7B2663E742-74DA-40F1-BE40-DA3348A984FB%7Dbrochure_tandem_service.pdf.

¹¹⁰ See Appendix A, *infra*. In prior comments, AT&T has urged the Commission to address “mileage pumping” schemes, which force IXC’s to pay excessive charges for transit service. See Comments of AT&T, *Connect America Fund et al.*, WC Docket Nos. 10-90 *et al.*, at 30-35 (filed Apr. 1, 2011). This problem will largely disappear if the Commission’s reforms ensure that all sending carriers have a choice of transit providers.

¹¹¹ See Letter from Ronald W. Gavillet, Neutral Tandem, Inc., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 06-74 (filed Dec. 29, 2006) (urging the Commission to avoid imposing transit rate conditions in the AT&T/BellSouth merger proceeding that would discourage entry by competitive transit service providers).

discriminatory terms. *See* 47 U.S.C. §§ 201, 202. For that reason, too, there is no need for prescriptive regulation of those services.

Dedicated transport service. Unlike switched transit services, dedicated transport is a *point-to-point* (i.e., unswitched) connection provided by means of high-capacity circuits. Depending on the regulatory context, dedicated transport can be known by a variety of alternative names, including special access. When a third-party intermediary sells dedicated transport to connect two other carriers, that transport occupies the same legal status as switched transit services. Like transit, dedicated transport does not involve “termination” of traffic, and it thus falls outside the scope of sections 251(b)(5) and 252(d)(2). And it falls outside the scope of “interconnection” for purposes of sections 251(c)(2) and 252(d)(1). *See* pages 62-65, *supra*. Of course, in a variety of contexts, dedicated transport services are subject to Commission oversight under section 201.

2. A Sending Carrier That Relies on a Terminating Carrier to Reach the Network Edge Should Pay the Terminating Carrier for Undertaking That Function

Terminating carriers are situated differently from third-party providers, because they *do* have a relationship with the called party, and, as the Commission has determined,¹¹² that called party causes at least some of the costs of any given call. Thus, unlike third-party providers, a terminating carrier (and ultimately its customers) should bear a designated share of the costs for calls it terminates—specifically, all costs on its side of the Edge.¹¹³

¹¹² *Order* ¶¶ 744-45.

¹¹³ Some paragraphs of the *FNPRM* could conceivably be read to suggest that terminating carriers should accept traffic at *any existing physical points of interconnection* without charge to sending carriers, even if the terminating carrier incurs substantial costs in transporting that traffic to its defined Edge. *FNPRM* ¶¶ 1297, 1306-10; *but see Order* ¶ 776; *FNPRM* ¶ 1320. As discussed in Section III.B below, such a regime would make no sense and, indeed, would undermine the very concept of the “Edge.”

Of course, this rule does not dictate where carriers must interconnect *physically*. That is, the sending carrier may elect not to build out its facilities to the Edge and may rely instead on some other carrier to discharge its financial responsibility for delivering traffic to the Edge. If the sending carrier chooses the terminating carrier itself for that task, the terminating carrier should be permitted to charge the sending carrier for performing that function, which we will call “extra-Edge transmission.”¹¹⁴ It would make no sense to force the terminating carrier’s customers to bear not only the costs of efficient transport and termination from the network Edge, but also the *additional* costs of transmitting traffic from an inefficient physical point of interconnection to the Edge; indeed, that approach would defeat the very purpose of defining an Edge.¹¹⁵

The Commission should find that this extra-Edge transmission function falls outside the scope of the statutory term “transport” for purposes of section 251(b)(5) and thus outside the pricing rules of section 252(d)(2).¹¹⁶ To be sure, the Commission previously has defined “transport” for purposes of section 251(b)(5) as transmission from the (physical) point of

¹¹⁴ See Appendix A, *infra*, § 1.j.iii. As discussed in AT&T’s proposed framework, the sending carrier should bear the costs of *both* (i) any “entrance facility” used to link the sending carrier’s network to a point of interconnection on the terminating carrier’s network and (ii) any transmission or switching necessary to deliver traffic from the point of interconnection on the terminating carrier’s network to that carrier’s Edge. *Id.* §§ 1.j.iii & 3.b-c.

¹¹⁵ This rationale is reversed, however, when the *terminating* carrier insists on physical interconnection at a location other than the default network Edge (*i.e.*, the terminating carrier designates an “Alternative Edge”). In those circumstances, AT&T’s proposal requires the terminating carrier to bear the costs of the extra-Edge transmission needed to deliver traffic from the point of interconnection at the Alternative Edge to the point on the terminating carrier’s network that otherwise would constitute the Edge. See Appendix A, *infra*, §§ 3.c.i-iii. Of course, the terminating carrier *also* bears the costs of transport and termination from the default Edge to the called party.

¹¹⁶ 47 U.S.C. § 251(b)(5). The Commission should make this change effective on July 1, 2012 for LEC-CRMS traffic, as discussed in Appendix A to these comments. See Appendix A, *infra*, § 7.a.

interconnection with an ILEC to the ILEC's terminating end office switch.¹¹⁷ While that definition may have made sense in a "calling party's network pays" regime, requiring the ILEC to bear the costs of transmission from the physical POI to its terminating end office switch, even when that POI is not at its network Edge, would encourage sending carriers inefficiently to shift to the ILEC the costs of meeting their financial obligation to deliver traffic to the ILEC's network Edge, and would discourage such sending carriers from any further build-out of their networks to that Edge, because they could now obtain all the same objectives without paying anything. Accordingly, the Commission should clarify that "transport" is limited to the function of carrying traffic *from* the terminating carrier's Edge to the end-office switch serving the called party.¹¹⁸

Similarly, the Commission should conclude that any extra-Edge transmission provided by a terminating carrier to deliver traffic to its own Edge is *not* section 251(c)(2) "interconnection" to which the pricing standards of section 252(d)(1) apply. Indeed, this is already the rule with respect to transport provided by the terminating carrier *from* the point of interconnection on its network. The relevant regulation defines "interconnection" as "the linking of two networks for the mutual exchange of traffic. This term does not include the transport and termination of traffic." 47 C.F.R. § 51.5. The Commission should adopt a similar approach for entrance facilities used to link the sending carrier's network to the point of interconnection on the terminating carrier's network. Granted, this approach differs from the one accepted by the

¹¹⁷ 47 C.F.R. § 51.701(c).

¹¹⁸ As discussed below, where a terminating carrier elects to establish its "Edge" at a point other than the default "Edge" locations specified by the Commission (that is, it establishes an "Alternative Edge"), the terminating carrier should be responsible for the costs of transmission on its side of that Alternative Edge. In that case, the terminating carrier's "transport" obligation would encompass the function of carrying traffic from the Alternative Edge to the end-office switch serving the called party.

Supreme Court (in deference to the position endorsed in the FCC General Counsel’s amicus brief) in *Talk America Inc. v. Michigan Bell Telephone Co.*¹¹⁹ However, as the Court held, “[n]o statute or regulation squarely addresses whether an incumbent LEC must provide access to entrance facilities at cost-based rates as part of its interconnection duty under § 251(c)(2).” *Id.* at 2260.¹²⁰ Lacking any clear statutory or regulatory guidance, the Court deferred to the General Counsel’s amicus brief. *Id.* at 2257, 2265. The Commission is free to reconsider that interpretation and conclude that entrance facilities do not qualify as “interconnection” for purposes of section 251(c)(2).

The Commission should do so now. As the Supreme Court noted, “the statute makes clear that an incumbent LEC need not provide access to *any* facilities—much less entrance facilities—to provide interconnection. . . . § 251(c)(2) does not mention incumbent LECs’ facilities, but rather mandates only that incumbent LECs provide interconnection ‘for the facilities and equipment of any [competing] carrier.’”¹²¹ Thus, an ILEC’s obligation under section 251(c)(2) is merely to enable competitors to connect their *own facilities and equipment* to the ILEC’s network at an interconnection point. In short, the Commission could readily conclude that any “entrance facilities” provided by a terminating carrier to transport traffic from the sending carrier’s network to a physical point of interconnection on the terminating carrier’s network do not constitute “interconnection” and therefore are not subject to sections 251(c)(2) and 252(d)(1) in general or TELRIC in particular.

¹¹⁹ 131 S.Ct. 2254 (2011).

¹²⁰ See also *id.* at 2260 (“Nothing in that language expressly addresses entrance facilities. Nor does any regulation do so.”).

¹²¹ *Id.* (alteration in original). The statutory text provides that an ILEC has the “duty to provide, for the facilities and equipment of any requesting telecommunications carrier, interconnection with the [ILEC’s] network” at a “point within” the ILEC’s network. 47 U.S.C. § 251(c)(2)(B).

This interpretation of “interconnection” is not only the most natural reading of the statute; it also makes abundant sense as a policy matter. The Commission long ago concluded that ILECs need not unbundle entrance facilities because competitors and third-party providers can readily replicate them.¹²² It therefore makes no sense to continue requiring ILECs to provide entrance facilities at TELRIC rates as part of their statutory “interconnection” obligations. This is particularly true given that the Commission is seeking to promote efficient interconnection through its bill-and-keep and Edge reforms.¹²³

Finally, the Commission also should take steps to ensure that its bill-and-keep framework endures even if a reviewing court rejects the Commission’s interpretations of sections 251(b)(5) and 251(c)(2). Specifically, the Commission should “forbear from applying” the “cost”-based pricing standards in section 252(d) to the extent necessary to ensure that extra-Edge transmission (including any necessary “interconnection” or “transport”) is not subject to rates set by state commissions.¹²⁴ Such forbearance clearly would be justified. There is no reason to fear that terminating carriers will set excessive rates for extra-Edge transmission. Rather, the availability of third-party transit and other services will provide an incentive for the terminating carrier to offer its entrance facilities and transport services to sending carriers at the most attractive rates

¹²² See Order on Remand, *Unbundled Access to Network Elements; Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers*, 20 FCC Rcd 2533, 2610-12 ¶¶ 137-41 & n.395 (2005) (“[The] record shows that self-deployment or alternative wholesale provisioning of entrance facilities are viable alternatives given the possibilities for traffic aggregation and efficient location of competitive LEC switches.”).

¹²³ As the Commission has noted, “competitive LECs have a unique degree of control over the cost of entrance facilities . . . because they can choose the location of their own switches.” *Id.* at 2610-11 ¶ 138. Accordingly, the Commission’s new regime should give competitors an incentive to site their facilities in efficient locations.

¹²⁴ 47 U.S.C. § 160(a).

possible.¹²⁵ And market-based rates will also give the sending carrier efficient incentives to build out facilities of its own when doing so is more efficient.

B. The Commission Should Adopt Efficient and Competitively Neutral Default Rules for Designating Network Edges

We now turn, more specifically, to the designation of efficient Edges for particular types of networks. In this Section, we explain why AT&T's proposed approach to network Edges¹²⁶ is the most sensible model for demarcating financial responsibility in a bill-and-keep framework.

Over the years, parties have proposed a number of approaches to this issue. In 2000, Patrick DeGraba, then Deputy Chief Economist of the FCC, argued that the terminating carrier's central office (or equivalent facility) should be the network Edge for bill-and-keep.¹²⁷ Traffic exchanged there would not be subject to any charges for termination; instead, the terminating carrier would recover the costs of the loop and end-office switch from its own end-user customers.¹²⁸ However, switching and transport charges would apply if sending carriers handed off traffic elsewhere; for example, traffic exchanged at a terminating carrier's access tandem would be subject to tandem switching and common transport charges.¹²⁹

CLECs opposed this approach on grounds of competitive neutrality. They noted that CLEC networks "use long-loops or fiber rings in place of the tandem switches deployed by ILECs" and that a typical CLEC end office thus serves a geographic area comparable to a

¹²⁵ See, e.g., *DeGraba Paper*, *supra* note 88, at 34 ("If there are a sufficient number of alternative providers of transport facilities, regulation should be unnecessary, for competition will drive the price of transport toward economic cost.").

¹²⁶ See Appendix A, *infra*, § 1.d.

¹²⁷ *DeGraba Paper*, *supra* note 88.

¹²⁸ *Id.* at iv, 2, 9-10, 13.

¹²⁹ *Id.*

tandem switch.¹³⁰ Given this, they argued, ILECs and CLECs would have asymmetric transport obligations if all carriers were permitted to designate their end offices as Edges for bill-and-keep. In a given area, the ILEC could deliver its traffic to a single point on the CLEC's network, while the CLEC would assume financial responsibility for delivering traffic to multiple end offices subtending a single access tandem.

Like proposals offered by the ICF and Missoula coalitions, AT&T's Edge proposal eliminates that concern. It requires ILECs with access tandems to designate those tandems as their Edges for all customers served by subtending end offices.¹³¹ This approach dramatically reduces the number of ILEC Edges to which other carriers must deliver their traffic. It also ensures that sending carriers have no obligation to pay the ILEC for tandem switching and common transport between the tandem switch and the called party's end office. At the same time, AT&T's proposal permits other LECs—CLECs and ILECs that do not own a relevant tandem—to designate their end offices as Edges.¹³²

AT&T's proposal also accommodates the unique needs of other types of carriers by establishing default Edge locations at the most rational points on those providers' networks, where it is both technically feasible and efficient for a terminating carrier to handle a large volume of traffic bound for customers located across a wide geographic area.¹³³ Wireless

¹³⁰ Comments of Focal Communications Corporation *et al.*, *Developing a Unified Inter-carrier Compensation Regime*, CC Docket No. 01-92, at 45-46 (filed Aug. 21, 2001).

¹³¹ Appendix A, *infra*, § 1.d.ii.2.

¹³² *Id.* § 1.d.ii.1.

¹³³ Under AT&T's proposal, if interconnection is not technically feasible at the point on the terminating carrier's network that would otherwise serve as the Edge, or if the terminating carrier is exempt from section 251(c), the terminating carrier may designate a different location in its service territory as its Alternative Edge. *See* Appendix A, *infra*, § 1.d.iii. As noted above, in that case, however, the terminating carrier bears the financial obligation for delivering the

carriers may designate their Mobile Switching Centers.¹³⁴ And *any* provider may designate a point of presence as its Edge when it lacks a physical switch in a LATA.¹³⁵ These rules appropriately account for the differences among various types of networks and are more competitively neutral than rules that would force all carriers to designate their end offices as Edges.

Despite these architecture-based variations, AT&T's proposal is both consistent and clear. The default Edge locations on similarly-situated networks are identical, and the limited flexibility afforded to differently-situated networks is designed to reflect only legitimate, real-world differences in network technology. Further, AT&T's proposal provides clear rules that apply without ambiguity in a wide variety of circumstances. They definitively establish, for example, how many Edges a carrier must designate and where those Edges must be located. Of course, AT&T's proposal establishes only *default* rules for the location of carrier Edges, and carriers will retain flexibility to enter into any other physical or financial arrangements pursuant to voluntary negotiations.

Significantly, all major bill-and-keep proposals since DeGraba's paper have advocated the use of clear, generally defined points within a terminating carrier's network architecture for this default division of financial responsibility. *No* serious proposal has argued that the Edge should be defined wherever two networks happen to be physically interconnected, such that two carriers never exchange compensation no matter where they interconnect.¹³⁶ Any such approach

sending carrier's traffic all the way from that Alternative Edge to the called party. *See id.* §§ 3.c.i-iii.

¹³⁴ *Id.* § 1.d.ii.4.

¹³⁵ *Id.* § 1.d.ii.3.

¹³⁶ Although the *Order* could be read to produce such a result for LEC-CMRS non-access traffic on July 1, 2012, *see* ¶¶ 976-1002, the Commission expressly noted that it was not

would be inefficient and highly disruptive. First, a regime that transformed physical POIs into default network Edges would eliminate any incentive for carriers to build out facilities, even where it is highly efficient to do so; it would simply freeze today's interconnection arrangements in place. Second, existing interconnection arrangements vary enormously from state to state and city to city, depending on the divergent policy goals of fifty-one state commissions. But consistency in the rules governing financial responsibility is essential for any intercarrier compensation regime that aims to standardize regulatory obligations and minimize legal uncertainty. Third, today's physical interconnection arrangements reflect the regulatory premise of the past several decades: that sending carriers will pay terminating carriers for all the costs the latter incur in completing a call, and that terminating carriers will thus be compensated for any extra work they must perform if sending carriers drop off traffic at inefficient locations. The Commission would arbitrarily and unlawfully leave terminating carriers holding the bag for that inefficiency if, by equating the Edge with existing physical POIs, it eliminated any prospect for cost-recovery in those circumstances. Finally, as a prospective matter, equating Edges with POIs would give all carriers overpowering incentives to litigate any proposed location for a new (or higher-capacity) POI, given that the choice among physical locations would carry enormous financial consequences.

By contrast, AT&T's proposed regime offers clear default Edge rules that leave no ambiguity for providers to manipulate or fight about. That regime also ensures that all providers' Edges cover comparable geographic areas, and it bestows equivalent rights and financial obligations, thereby producing far more efficient and competitively neutral outcomes than a

prejudging the issue of whether the Edge for such traffic ultimately should be the existing point of interconnection between the mobile and wireline providers. *Id.* ¶ 998-99. And, for the reasons discussed here and in Appendix A, the Commission should instead adopt AT&T's Edge proposal for LEC-CMRS traffic. *See* Appendix A, *infra*, § 7.a.i.

regime that bases financial responsibility on the one-off carrier negotiations and inconsistent state-commission decisions that generated today's disparate POI locations. And because AT&T's proposal provides consistent rules across networks and jurisdictions, it will bring uniformity to financial interconnection, without which a uniform intercarrier compensation regime is impossible. In short, AT&T's proposal is far superior to one that merely enshrines existing physical points of interconnection (however inefficient) as network Edges.

Finally, whether or not the Commission adopts AT&T's Edge proposals in particular, the Commission must adopt some specific and consistent regime for identifying network Edges. It should therefore *not* adopt the *FNPRM*'s proposal to delegate that decision to the state commissions.¹³⁷ The Commission's central objective here is to replace the existing patchwork of broken intercarrier compensation regimes with a uniform and efficient solution. Allowing states unfettered discretion to define the Edges of provider networks would subvert that objective. The Commission would also trigger massive and inefficient administrative litigation if it permitted fifty-one state commissions to prescribe and then apply fifty-one different regimes for the designation of network Edges.¹³⁸ Instead, the Commission should establish consistent and clear rules that can be readily interpreted by the providers themselves and that leave no ambiguity for resolution by state commissions. Of course, states will retain their traditional authority to resolve carrier disputes over the locations of *physical* POIs under section 251(c)(2) of the Act.

C. The Commission Should Establish a Transition for the Elimination of Originating Access Charges

As the Commission acknowledges in both the *Order* and the *FNPRM*, section 251(b)(5) authorizes intercarrier compensation only for the "transport and *termination*" of traffic and,

¹³⁷ *FNPRM* ¶ 1321.

¹³⁸ See also *DeGraba Paper*, *supra* note 88, at 20 n.58 ("[T]here is no reason to suppose that the regulator will have the information necessary to select efficient meet point locations.").

consequently, bars origination charges for any traffic that falls within its scope (except to the extent such charges are grandfathered pursuant to section 251(g)).¹³⁹ Because the Commission has now concluded that *all* telecommunications traffic, including access traffic, falls within the scope of section 251(b)(5),¹⁴⁰ the Commission ultimately should transition all originating access rates to zero. But rather than relying on overly prescriptive regulatory solutions, in the short term, the Commission can and should let market forces do much of that work.

In the end, precisely what the Commission does with originating access charges is less important than recognizing that the distinction between “local” and “long distance” services is a vestige of an obsolescent regulatory structure that should be abandoned. That distinction is not observed by providers of “modern” communications platforms—such as VoIP and mobile phone service—that sell their customers bundled “all distance” service, and it only persists on the PSTN because of regulatory requirements that are no longer necessary, and indeed are counterproductive, in today’s market. In particular, the so-called “equal access obligation,” originally imposed by the AT&T consent decree and today applicable through 47 U.S.C. § 251(g),¹⁴¹ as well as the geographic-rate-averaging provision of section 254(g), perpetuate an outdated business model in which a carrier arbitrarily and inefficiently segregates its service offerings into “local” and “long-distance” components. The former obligation, which applies

¹³⁹ Order ¶¶ 777-78, 817-18; *FNPRM* ¶ 1298. See also *Local Competition Order*, 11 FCC Rcd at 16016 ¶ 42 (“Section 251(b)(5) specifies that LECs and interconnecting carriers shall compensate one another for termination of traffic on a reciprocal basis. This section does not address charges payable to a carrier that originates traffic. We therefore conclude that section 251(b)(5) *prohibits* charges such as those some incumbent LECs currently impose on CMRS providers for LEC-originated traffic.”).

¹⁴⁰ Order ¶¶ 760-68.

¹⁴¹ See generally Notice of Inquiry, *Notice of Inquiry Concerning a Review of the Equal Access and Nondiscrimination Obligations Applicable to Local Exchange Carriers*, 17 FCC Rcd 4015, 4017-18 ¶ 6 (2002).

only to ILECs, significantly increases their costs and inhibits their ability to compete effectively with all-distance mobile and VoIP providers, which have surpassed ILECs as the principal source of voice communications for most consumers. In short, both obligations distort the evolution of the marketplace, and the Commission should eliminate them as soon as feasible, but, in any event, no later than January 1, 2013.¹⁴²

As part of these reforms, the Commission should also permit IXC's to exit the *retail* standalone long-distance business without complying with burdensome section 214 filing requirements. Of course, LECs without long-distance affiliates will still remain free to offer “all-distance” services of their own by partnering with wholesale IXC's. And there is no risk that the exit of standalone IXC's from the *retail* market would somehow harm consumer choice. Consumers will continue to benefit from fierce competition for the provision of all-distance services from ILECs, wireless providers, cable companies, VoIP providers, and others.

Together, these reforms will render irrelevant originating access charges, without any need for replacement funding—either through end-user charges or universal service support—except in certain specific circumstances. In particular, in the context of 8YY traffic, and possibly for rural carriers that rely on the access-charge system as a source of implicit subsidies, the Commission may need to develop an adequate recovery mechanism for lost originating access revenues. The extent to which such funding may be necessary, and the specifics of any such recovery mechanism, should be determined through an independent rulemaking proceeding initiated by the Commission. However, it bears noting that—except for 8YY traffic—recovery will not be needed by LECs serving the vast majority of Americans, which will benefit from the

¹⁴² To the extent that this would require the Commission to exercise its authority under 47 U.S.C. § 251(g) or its forbearance authority, the Commission should do so.

lower costs incurred by their long-distance affiliates or wholesale partners under the proposed plan.

Once these reforms are put in place, the Commission will have two options for what to do about “originating access” charges. The Commission could, as it did in the *Order* for other rate elements, establish a schedule that gradually ramps such charges down to zero. Alternatively, the Commission could recognize that, in a world where carriers increasingly provide their customers with integrated all-distance services, regulating originating access charges is no longer necessary. Under this second option, the Commission would immediately detariff originating access and leave such charges (if they remained in existence at all) to market forces. Either way, the Commission should recognize that it no longer makes sense to preserve an archaic distinction between “local” and “long-distance” service.

D. The Commission Should Adopt Policies to Promote the Transition from Tariffing of Intercarrier Charges to Their Inclusion in Interconnection Agreements

Under AT&T’s proposal, carriers eventually will be required to rely solely on interconnection agreements, and not tariffs, to set the rates, terms, and conditions for their exchange of *all* traffic encompassed by section 251(b)(5). Thus, for many terminating charges, existing tariffs will need to be replaced with agreements negotiated or arbitrated pursuant to section 252. The Commission has clear authority to mandate these reforms.

First, the Commission can require all telecommunications carriers to negotiate interconnection agreements and to submit to the state arbitration process set out in section 252. Although that provision imposes explicit duties only on ILECs and does not expressly require other carriers to negotiate agreements or comply with state arbitration procedures, nothing in section 252 (or section 251) reflects an affirmative congressional policy judgment to insulate non-ILECs from such duties. Indeed, the Commission concluded as much in the *T-Mobile Order*,

where it authorized any ILEC to “request interconnection from a [wireless] provider and invoke the negotiation and arbitration procedures set forth in section 252 of the Act.”¹⁴³ The Commission recently reaffirmed this conclusion in the *Order*, holding that it had both direct authority under section 201 *and* ancillary authority under sections 4(i), 201, and 251 to require wireless carriers to “comply with the negotiation and arbitration procedures set forth in section 252 of the Act.”¹⁴⁴ There is no legal or policy reason not to apply this same conclusion to *all* non-ILECs. Rather, the Commission has authority under section 201 and its ancillary jurisdiction to require any carrier to negotiate and arbitrate interconnection agreements—particularly when those agreements are critical to effectuating the Commission’s substantive intercarrier compensation rules for section 251(b)(5) traffic.¹⁴⁵

Second, the Commission can require carriers to detariff any charges that fall within the scope of section 251(b)(5). This principle too was established in the *T-Mobile Order*.¹⁴⁶ There, the Commission concluded that tariffs for LEC-terminated wireless traffic were “inconsistent

¹⁴³ Declaratory Ruling and Report and Order, *Developing a Unified Intercarrier Compensation Regime and T-Mobile et al. Petition for Declaratory Ruling Regarding Incumbent LEC Wireless Termination Tariffs*, 20 FCC Rcd 4855, 4863-65 ¶¶ 14-16 (2005) (“*T-Mobile Order*”). See also *id.* at 4864-65 ¶ 16 (a wireless provider “receiving such [an interconnection] request must negotiate in good faith and must, if requested, submit to arbitration by the state commission”).

¹⁴⁴ *Order* ¶ 837 (discussing ancillary authority); see *id.* ¶¶ 826, 832-39 (discussing both direct and ancillary authority). The Commission also concluded that it had direct and ancillary authority under section 332. See *id.* ¶¶ 826, 833-39.

¹⁴⁵ The *Order*’s statements on this subject apply with equal force to all non-ILECs: “[T]o meaningfully implement intercarrier compensation requirements established pursuant to section 201, 332, and 251(b)(5) against the backdrop of mandatory interconnection and prohibitions on blocking traffic under sections 201 and 251(a)(1), it was appropriate for the *T-Mobile Order* to impose requirements on CMRS providers beyond those expressly covered by the language of section 252.” *Order* ¶ 837.

¹⁴⁶ *T-Mobile Order*, 20 FCC Rcd at 4855, 4863-65 ¶¶ 1, 14, 16.

with the framework established in section 251 and 252 of the Act.”¹⁴⁷ There is no reason why the Commission should not apply this principle more broadly and conclude that, at the end of the transition outlined in the *Order*, no carrier may tariff charges for traffic encompassed by section 251(b)(5).

Finally, as carriers make the transition from tariffs to interconnection agreements, the Commission should limit application of the general principle that the terms of a mandatory “tariff cannot be varied or enlarged by . . . contract . . . of the carrier.” *Maislin Indus., U.S., Inc. v. Primary Steel, Inc.*, 497 U.S. 116, 126 (1990) (quoting *Keogh v. Chicago & Nw. R. Co.*, 260 U.S. 156, 163 (1922)). Specifically, the Commission should make clear that carriers may enter into binding interconnection agreements with rates and terms that differ from those in their tariffs.¹⁴⁸

IV. THE COMMISSION SHOULD PRESERVE MECHANISMS FOR THE RECOVERY OF LOST INTERCARRIER REVENUES IN THE SHORT TERM

A. The Commission Should Wait to Reduce Subscriber Line Charges

The Commission seeks comment on “whether SLCs are set at appropriate levels today and whether, longer term, the Commission should retain such regulated charges under existing or modified rules, or if those charges should be eliminated.”¹⁴⁹ Today, carriers use subscriber line charges to recover real network costs, and thus those charges will continue to be needed in the

¹⁴⁷ *Order* ¶ 830 (citing *T-Mobile Order* at 4863-64 ¶ 14). *See also T-Mobile Order*, 20 FCC Rcd at 4683 ¶ 14 (“[W]e find that negotiated agreements between carriers are more consistent with the pro-competitive process and policies reflected in the 1996 Act. Accordingly, we amend section 20.11 of the Commission’s rules to prohibit LECs from imposing compensation obligations for non-access traffic pursuant to tariff.”).

¹⁴⁸ For additional detail, *see* Letter from Heather Zachary, Counsel to AT&T, to Marlene H. Dortch, FCC, WC Docket Nos. 10-90 et al., at 8 (filed Oct. 19, 2011).

¹⁴⁹ *FNPRM* ¶¶ 1330-33.

short term. Of course, as ILECs become non-price-regulated providers of all-IP services, “SLCs” will become mere historical curiosities.

The *FNPRM* inquires whether SLCs are excessive today because “the Commission has not evaluated the costs of [price-cap] carriers in nearly ten years.”¹⁵⁰ In reality, the opposite is true, because the per-line costs of providing POTS service have *grown* in the past decade. ILECs have lost lines at an astonishing rate. In the states where AT&T serves as an ILEC, for example, incumbents have suffered a 52.3 percent drop in their residential lines from December 1999 to December 2010.¹⁵¹ And because circuit-switched voice networks have high fixed costs, carriers’ network expenses are declining more slowly; thus, every customer that a carrier loses increases the average cost per line of serving the customers that remain.¹⁵² At the same time, the number of housing units nationwide has increased dramatically, and ILECs generally have ETC and carrier-of-last-resort obligations that compel them to extend their POTS facilities to those new housing units regardless of the business case for such network expansion. Indeed, the number of housing units in the states where AT&T serves as an ILEC has risen by 16.3 percent over the same time period.¹⁵³ Combined, these factors have resulted in a steady increase in ILECs’ per-

¹⁵⁰ *Id.* ¶¶ 1326, 1330.

¹⁵¹ See Appendix B to these comments, *infra*. As detailed in the Appendix, this percentage is expected to grow to 68.3 percent by December 2012.

¹⁵² Saul Hansell, *Will the Phone Industry Need a Bailout, Too?*, N.Y. Times, May 8, 2009, <http://bits.blogs.nytimes.com/2009/05/08/will-the-phone-industry-need-a-bailout-too/>; Craig Moffett, *Weekend Media Blast: The Wireline Problem*, Bernstein Research, at 2 (May 15, 2009); Comments of AT&T, *Connect America Fund et al.*, WC Docket Nos. 10-90 *et al.*, at 11-12 (filed Apr. 18, 2011).

¹⁵³ See Appendix B to these comments, *infra*. This percentage is expected to grow to 19.4 percent by December 2012. Some of these housing units are unoccupied, and thus the percentage growth in households is somewhat lower, namely 12.9 percent by December 2010 and 15.3 percent by December 2012. But the number of housing units more accurately captures the effect on per-line costs, because ILECs bear the burden of deploying facilities to new housing units regardless of whether they are occupied.

line costs. There is, therefore, no justification for reducing the subscriber line charges upon which carriers depend today to recover those costs.

That said, in the long term there will be no need for “the Commission [to] retain such regulated charges.”¹⁵⁴ For example, once providers have transitioned to all-IP networks and are no longer rate-regulated, it will be unnecessary for them to impose a separate “subscriber line charge.” Instead, as in the wireless marketplace today, providers will simply charge whatever combination of flat-rated and usage-sensitive rates the market will support.

B. The Commission Should Not Further Reduce Carriers’ Permissible ARC Charges or CAF ICC Support

In the *Order*, the Commission created two transitional mechanisms—the ARC charge on end users and “CAF ICC” support—to enable providers to recover some of the intercarrier compensation revenues they will lose under the new regime.¹⁵⁵ But the *Order* also reduces both sources of recovery over time.¹⁵⁶ In the *FNPRM*, the Commission inquires whether it should phase out these sources of recovery even more quickly.¹⁵⁷ The answer is no.

Like SLCs, intercarrier compensation charges recover substantial network costs today. Those costs include the call origination and termination functions and, sometimes, particularly at the state level, the costs of serving high-cost customers at below-cost rates.¹⁵⁸ The Commission cannot reduce those charges without providing alternative means of recovery if it hopes to maintain the quality and geographic scope of existing services. Further, as discussed, many carriers’ network costs have been increasing on a per-line basis and are likely to do so for the

¹⁵⁴ *FNPRM* ¶ 1330.

¹⁵⁵ *Order* ¶¶ 852-53, 905-23.

¹⁵⁶ *Id.* ¶¶ 850-53, 867-904, 908, 918.

¹⁵⁷ *FNPRM* ¶ 1327 (discussing ARC charges); *id.* ¶ 1328 (discussing CAF ICC support).

¹⁵⁸ *Order* ¶ 853.

foreseeable future. Thus, even in the absence of intercarrier compensation reductions, there would be a need for carriers to recover their PSTN costs through a combination of end-user charges (like the ARC) and universal service support (like the CAF ICC mechanism). The Commission therefore should reject any proposal to reduce even further the declining amounts that will be available from these mechanisms under the *Order*.

CONCLUSION

The Commission should smooth the transition from the circuit-switched PSTN to the all-IP network of tomorrow by adopting the policies described above.

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